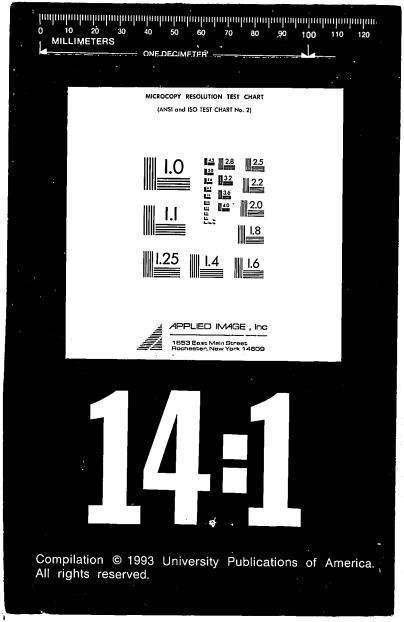

# Thomas A. Edison Papers

*A SELECTIVE MICROFILM EDITION*

*PART III*
*(1887–1898)*


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# START

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**Notebook, N-88-00-00.1**

This undated notebook was probably used in 1888. The entries are by Edison and his wife, Mina Miller Edison. The book contains notes regarding the melting properties of numerous chemical compounds used for insulation. Some of the compounds are identified for potential use in phonograph cylinders or lamp filaments. The pages are unnumbered. One page has been removed from the back of the book. Approximately 60 pages have been used.

N-(88-00-001)

2 mc Sulpho Carbolate
Dont melt, burns &
leaves ox. Zn

Sulpho-Carbanilid-
Melts easily. Micaceous
Scales, after melting
not coherent, burns —
may be good mixer
for phenol Cylinders

Sulpho-Carbamid
like the above but
more non-coherent
after melting

Succinamid,
Melts blockers, boils
leaves non-coherent residue

Oxalate Standard
Chromate
Dont melt

Kalium Xanthogenic
melts & leaves hard
& black stuff -
Smell on granulating

Lacto-phos - Magnesium
Dont melt,

Magnesia Sulphurosa
Dont melt

Magnesia Sulpho-phenylic
Dont Melt,

Chromin -
Melts, blackens -

Orcin Easily melts.
blackens - liquid
Like -

Oxamaethan
Melts very easily
ng/

Nitroso-Dimethylaniline
Hydrochloride Melts
argues fairly large quant
Charcoal, puffs up boiled

Nitroso B-Naphthol
puffs up - mod amt
Charcoal inflam

Nitrophenol - Meta
Melts, blackens boils
leaves little blonde —
might do for Hardness
pheno

Nitro-phenol (Ortho)
Boils all away

Nitronaphtolin boils away, may be good for Phonograph.

Nitroso ~~Meth~~ dimethylanilin melts and leaves considerable charcoal, rather shiny, puffs up.

Naphtalin Chromat- melts and boils away, might be good for phonograph.

Nitrotoluol, crist, para- Boils all away.

Oxy bengal - saun para- Melts, leaves considerable charcoal not shiny.

Allyl - Sulphocarbamid - melts easily and leaves very little charcoal good for Photograph -

Alania - burns all away without melting

Para oxybenzaldehyd - non coherent -

Bismuth Subcarbon - Does not melt -

Barium propionic - slightly bitumious -

Baryum Sulphuret - Does not melt

Acid Sebacylic - Melts; very little charcoal. Noncoherent.

Acid Trichloracetic - Boils all away. Melts easy, non coherent.

Acid. Sulfanilic - Phenomenon - Carboniyes almost entirely, scarcely any thing if anything comes off - Crystals preserve their shape - Charcoal difficult to combustable - Charcoal shiny - Insoluable in water - This is first class - Probably Soluable in Non Aqueous liquids may do

for 17 and insulation

Aconitine, amorph. pur. pulv. - Melts easily - Resinous, brittle substance, Dont Carbonize -

Acid. Uric - Dont Melt - Carbonizes with difficulty, scarcely anything goes off Caker together - Somewhat difficult to Combustable but black and hard to Carbonize - good to investigate

Acid. Taurocholic - "Melts to a Resin leaves ashy charcoal - Very easily combustable -

Tartaric Acid - "Too much water - boils violently - leaves very little - easily combustable. Charcoal, N. G.

Acid Hol framic" - Does not melt or change

Acid Succinic - " Melts easily - Boils all away - Crystalline - May do for Phonographic Cylinder -

Arsenic Sulphide - " Melts easily to hard glassy brittle Mass.

Antimon Sulphur - " Melts easily - boils nearly all away - leaves little charcoal - Dont Combustable

Arcanthia - Insoluable in water - & carboniqua to charcoal with little fusion - Very little goes off - charcoal cakes and rather shiny - good - Investigate -

Bromidamedo Bengol Hydrochlorate - Melts and Puffs up enormously - like Sulphocyanide of Mercury - Shining - Difficult combustable - Charcoal bulky porous - Very little flame - Very large charcoal Residual -

Carbonat of Baryl - Dont Melt -

Cupr. Acit. cryst. C. P. - Dont Melts - But gives off a flames and reduced to Oxide Copper -

Ammoniated Copper - Scarcely melts - Reduced to black Oxide Copper -

Cuprum Arsenicas - Scarcely melts -

Cuprum Chlorat - Dont melt - Reduced to black oxide.

Cupri Cyan - Difficult to melt - fusible.

Cupr. Iodat - Dont melt - Decomposes

Cuprum Boracic - Decomposes - Scarcely melts -

Cuprum Carbonic - Decomposes Easily to black oxide of copper with out melting -

Acid picraminic crystl. - Melts with vivid combustion; leaves easily combustable charcoal -

Acid Rufigallic - Carbonizes to very easily combustable Charcoal, which self burns out a minute - Much Ash - Considerable flame -

Acid piperinic - Melts with difficulty - Big flame - Small residue Porous carbon not shiny -

Acid Rhotalic - Burns all away: Melts Easily -

Spinsaurier Antimon Pot - Dont melt - Decrepitates

Antimon. et Flav. Tartar - Dont melt -

Ceromnesia hydrochloric not tested.

Acid Rosolic – Melts – Puffs up enormously – Charcoal easily combustable – Little flame – Stuff non-crystaline – May be some gloss

Arabinoe – Melts. Carbonizes – Considerable charcoal not very shiny

" "

Arsenic Metable "

Sugar – Swells up, gives darke glistening charcoal – Moderately Easily combustion – Considerable flame – Charcoal film – Coherent –

Asbutin Crist – Melts easily – boils very little – Charcoal as shiny as sugar – Difficult combustable – Incarbonized stuff – Resin like after melting –

Conglutin – Melts Hard – Large Residue of Charcoal puffs like Sugar Shines better – more difficult combustable but films & Charcoal brittle

Acid Pyrogallic – Melts and sublimes – no charcoal – Melted button – Friable

"

Conifirin - Melts and acts like sugar, about same residue not slimy and Charcoal very easy combustable

Arsenic nitr. fumic - Melts to bottle glass easily - Good stuff later sharp impressions.

Sulphuret of Stibium - Arsent - Melts with difficulty if at all - but at certain point combines with the nickel to a button -

Stibium Arsenicic - Dont Melt - Fluoresces like lime -

Stibium Sulfidat. " Alb. Ph. Bor. V. Dont Melt -

Acid Larsenic - " Melts and all Volatilizes

Acid Nitrophtalic - " Melts and nearly all volatilizes

Acid Diphenic - " Melts and all Volatilizes -

Acid Nitrophengl propiolic - Melts - Leaves small residue of puffy friable charcoal.

Acid Hippuric - " Acts like sugar but Charcoal not quite so coherent.

Acid Molybdatmic - " Don't Melt -

Acid Margarinic - " Melts and burns all away - Melted stuff non coherent -

Anilin Sulphuric - " Melts with difficulty - Leaves large quantity of hard coherent charcoal - difficult combustable - fairly shiny -

Amylsulphydate - " Very curious - Don't melt - scarcely anything comes off - holds its shape - Very coherent - fairly shiny - seems of whole mass shiny charcoal - difficult combustable - Investigate -

Acid. Cofairic - " Melts very easy - Burns without residue - Melted ~~stuff~~ button - opt. Can be drawn into ~~threads~~ glassy - Investigate for phono - etc.

Chloronaphtalinic – Boils all away – Button brittle

Acid Cinnamylic – Melts and burns all away – Melted button friable.

Acid Cathartinic – Scarcely melts Button charcoal and shiny – Very combustable charcoal.

Acid Chinic Crist. – Melts Acts like sugar but leaves very little charcoal –

Acid Camphoric – Melts fairly easy But puffs up – Scarcely anything comes off as any flame – charcoal very coherent and surface very shiny – investigate.

Chloroxeton Gaun – Acid – Melts easily – no residue – button non-coherent –

Acid Camphoric – Melts easily, burns without residue – Button friable

Alphanaphtoic – Melts instantly no residue –

" "

Acid Aloetinic – Very inflamable ½ residue of black charcoal non-coherent.

Acid Agelainic " Melts easily – no residue – Button friable –

Ammon Arsenicos – Scarcely melts –

" "

Acetotoluidin cind. Melts no residue – Button very friable.

Amido-azobenzol Hydrochlorate – Puffs greatly – nearly all charcoal – Exceedingly shiny – difficult combustable, not very coherent –

" "

Amidopropionsäure – Dont melt burns all away.

Ammon. picronitric – Vivid combustion but less than Magnesium black easily combustable charcoal and not much of it.

" "

Amidophenol para. – Melts and burns with scarcely any residue – Button hard and brittle

Amidophenol " – Melts easily – scarcely any residue – Button brittle & hard –

Amido-azo benzol – Melts – no residue – Button hard and brittle

Bromide Ammonia – Dont melt Volatilizes slowly away –

Ammonium Bichromate – Dont Melt – Decrepitates violently –

Ammon. Hypophosphorous – Fuses to a very sappy – sticky mass – Nonvolatile "

Ammonia Tartrate – Ammonia leaves nearly all charcoal – Dont Melt – Frothing – Coheres – Insulgate.

"

Ammon. Iodat - Volatilizes -

Ammon. Nitric - "Does not melt in the slightest - Carbonizes and keeps shape - no flame whatsoever - charcoal dark but this is because it don't melt - Good for insulation if insoluble in water - Good for 17 Investigation - non crystalline -

Ammon. Succinic - Melts - leaves practically no residue - but black stuff left stands red heat + is still sticky - very little flame - Button heated until melted, Poppy, higher heat black + sticky -

Caffein Valerianic, rr. - Melts - no residue -

Caffein, Citric, rr. - Melts - no residue

Cadmium Sulfate - "Don't Melt -

Caffein Benzoic, rr. - Melts, no residue -

Caffein, Sulphuric, rr. Crystal, - Melts, no residue -

Caffein Arsenicic - Melts - no residue -

Carbodiphenylimid - Melts - no residue - Button semi - friable -

Cathartin - Difficult to Melt - Puffs, gives bulky charcoal - Very Combustable + lots of ash -

Carthamin - Scarcely melts - Puffs + leaves very easily combustable charcoal -

Casein - Semi - melts - Puffs and gives large quantity fluffy charcoal - quite coherent, woody immediately -

Cinchoniae Sulphas - Melts - Puffs and boils violently - leaves but little charcoal which is coherent and shiny -

Cobalt chloral Crystal. finniss - Melts Easily - Non coherent button -

Cinnicæ fingin- Melts- Small amount of charcoal- Black and Easily combustable -

Chrysolicæ pur.- " Fuses- Very puffy, combustable charcoal- not shiny -

Chrysacilin - Melts very little - Nearly all charcoal - puffy - Charcoal not shiny and somewhat coherent - May be something in it.

Cobalt Ammon. Sulphuric - Don't melt. "

Chrysen pur. cryst. - Melts without residue - "

Cobalt Oxalic, much - Don't melt.

Cinchonidia - Melts no residue - button friable - "

Sulphate of Cinchonidia - Melts - Easily frile - Very little charcoal but coherent and black on top - shiny underneath - "

Cinchonia Alkaloid – Melts –
Burns without residue –

Cinchonia Chloride – Melts easily –
Very little charcoal – Puffy but co-
herent and shiny –

Magnesia Hypophosphite – Melts slightly
Phosphorous – Sil fuse and Phosphoric
Anhydride given off –

Magnes. Phosphate – Only semi-fuses –

Magnesia Sulphite – Semi-fuses –

Magnes. Lacto-Phosph – Don't fuse –

Magnesia Lactic – Don't fuse – might
do for a Millsbach –

Magnesia Hyposulphurous – Semi-
fuels – Fluoresces immediately – Elegant for a Millsbach –

Magnes. Valerianic " – Melts – but
leaves scarcely any residue of Mag-
nesia –

Magnesia Tartaric " – Scarcely melts –
Deliquitates but elegant Millsbach –
"

Magnes. Sulpho-phenylic- Dont melt- N. S.

Magnesia Sulphurosa- Dont Melt-

Magnesia Benzoic- " Melts- Black, Glassy. Little button, boil nearly all away-

Magnes. Chlorat- fuses- puffs- Good Millsbach-

Magn. Boro-citric- " Dont Melt- N. S.

Magnesia Coracic- " Dont melt-

Magnesium Citricum- " Dont Melt.

Magnesia Carbon- Crist. pur.- Dont Melt- "

Lactate Zinc - Scarcely fuses

Nitrate Zinc - fuses viscous mass - boils - afterwards decomposes to yellow oxide -

Sulpho Carbolate Zinc - puffs - dont melt, blackens - shiny -

Zinc Phosphoric - Dont melt,

Zinc Tannic - Dont fuse - Scintillates decomposes -

Zinc Phosphorous - Cakes together quite hard

Valerianate Zinc - melts, boils - decomposes - gives off dense white oxide -

Zinc Picronitric - Melts to brittle Resinous stuff - Explodes !

Zinc Salycilic - puffs - carbonizes decomposes - turns pink on slight heat -

Zinc Benzoic - Dont melt - Decomposes

Zinc Boracic - melts at Red to white Enamel.

Zinc Chromic - Dont melt - turns black.

Zinc Cyanuretum - decomposes to yellow ox - seems be anhydrous probably good for lamp residual

Zinc Ferro-Cyanat - Dont melt seems be anhydrous - after ignited red hot stays so for long time. -

Zinc Hypophosphorous - decomposes and gives off phosphorus which burns to phosphoric anydride - may be good for Lamp residual -

Natrium Uric. - Dont melt blackens

Natrium Valerian - fuses - boils all away but oxide Na - button brittle

Natrium Xanthogenic - Semi-fuses - decomposes

Weinsaures Kali - Natron - Fuses to syrupy mass - Carbonizes to black porous charcoal

Stilbon - boils all away Button friable -

Carbonate Strontium - Dont melt -

Chloride Strontia - fuses at red heat to pure colorless Enamel - brittle & not perfectly coherent but would be if fused more probably -

Natrium Wolframe –
difficult melt at red heat cakes
somewhat together –

Strontium Sulphate dont
melt but slightly cakes
at red heat

Sulphite Potassii –
Dont melt – slightly
Cakes — Think it has
fluorescence –

Iodide Potassium –
Decomposes strongly
but stood melts to
transparent Enamel
somewhat flexible &
can be cut with Knife

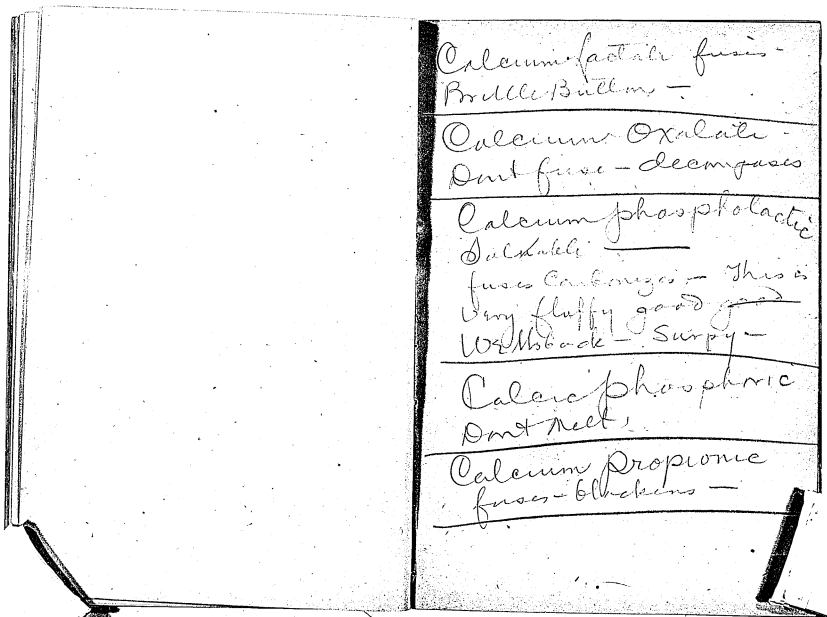
Oxalate Potassia - Semi fuses
blackens —

Phosphate Potass - nearly
fuses. boils + fumes to Cmpt

Natrium Tasnic —
Puffs like Sulphocyanide Hg
+ fumes charcoal beautifully
Combustible — funny

Tartrate Potash
puffs up slightly -
Carbonizes

Calcic Hypophosphis —
Semi-fuses - Cakes hard
together - gives off large
quantity Phosphorus
Residue again gives smoke
of Phosphoric anhydride


Calcium lactate fuses -
Bubbles Bubbles —

Calcium Oxalate -
Dont fuse - decomposes

Calcium phosphotactic
Dissolves
fuses Carbonizes — This is
Very fluffy good gas
Withback — Sumpy —

Calcic phosphoric
Dont melt,

Calcium Propionic
fuses - bubbles —

Calcium Saccharat
(but caking without fusion)
Doesn't melt – Carbonizes
probably melts slightly, Examine for element
Jard Wellsbach – As this
is soluble in $H_2O$ form a base
Com agent. Immediately

Sulphide Calcium
Don't melt.

Lapstandum –
Melts – burns – family
Conductable res. Inc –
Combustable charcoal.

Lithium Benzoic –
Melts to friable button.
Small hard Combustable
Charcoal.

Lithium Boracic - Does fuses at red heat -

Lithium Carbonate - fuses at Red heat to glass flux to Strongly

Lithium Carbonic - Fuses at very high heat -

Lithium Chlorat - " " high heat - hard but granular.

Lithium Citric - Puffs - Semi-fuses - Black, fluffy charcoal - Lithium comes off -

Lithium Ferro-Citric - Puffs up - Carbonizes Easily combustable charcoal - Black -

Lithium Oxalic - Carbonizes - Easily Combustable charcoal -

Lithium Oxydat - Melts - Bubbles as Glass

Lithium Phosphoric - Don't Melt -

"

Litharge Salicylic - Burns without melting -

Litharge Sulfo - Phenilic - Burns - Dont Melt - Easily combustable charcoal

Litharge Sulfuric - Decipitates all away -

Plumb. Phosphoric - Decomposes to litharge without fusing -

Phosph Sulfuret - Decomposes - Dont Melt -

Plumb Sulfuric - Dont Melt -

Plumb. Sulfurous - Dont Melt - Decomposes

Plumb. Tannic - Sicc. - Dont Melt. Pyrophoric

Plumb. Tartaric - Dont Melt - Pyrophoric

Plumb. Hyperphosphoros - Melts - Enormous quantities phosphorous set free - Melts to glass after phosphorous goes away -

Plumbum Hyposulfuros - Dont Melt - Instantly turns black -

Opalylate ~~Head~~ of Lead - Melts to Enamel - Somewhat brittle - Iodine given off -

Plumbi Peroxid - "Dont Melt - Reduced Easily to Litharge -

Plumb. Acetic. Plumbus - Melts - Brittle button - Leaves very little Litharge -

Plumb. Boracic - "Fuses slightly with difficulty

Plumb. Chloral - "Fuses high temperature Brittle button -

Plumb. Cyanat - Decomposes and Litharge melts -

Plumb. Ferrocyanat - "Dont melt - Tinder like burns long while after end of the flame -

Ferrum Malic - "Dont Melt - Pyrophoric

Calcium Carbyric fum. - "Fuses to brittle glass - Puffs up greatly and after burning makes elegant Milkbeche

Calc. Chromic - "Dont Melt - Turns reddish

"

Calc. Silicic - Dont Melt -

Calc. Nitros - "Melts - Bursts button fuses off lots of Nitric acid -

Sodii Sulphas Cryst - Fuses in water - Crystallization.

Sulfo-Carbolate of Soda - Semi - fuses - Blackens - Inflammable.

Natrium Sulfuric. Does not melt - may be but gives off Sulphur quickly and burns for long time alternately with beautiful purple color.

Sulfovinate Natrium - Melts + burns.

Sodium Tartrate fus. - Melts to puffy charcoal -

Morphiae Acetas - Melts - boils - Very little shiny charcoal not very combustable -

Morphiae Muriat - Melts - Boils - Small residue charcoal - fairly coherent + shiny.

Sulphate of Morphine - Melts to puffy charcoal - Rather shiny and considerable in quantity - not very combustable -

Calcium Lacto - Phosphoric -
Slightly fused so it sticks together
Carbonlyte -

Strontium Bromic - Melts at a
very high temperature - Brittle as
glass - May do for lead battery -

Schwerschtain cross - Melts and gives
off lots of white fumes - Leaves very
small yellow residue -

Strychnine Nitric - Melts - Boils -
Leaves very small amount shiny
charcoal difficult combustable -

Hydrarg. Subjunal nitr. - Don't fuse
Decomposes to blacks -

Hydrarg - Oxalic Oxydul - Evaporates
quickly all away -

Hydrarg. chromic - Don't Melt
Decomposes - Blackens -
How would this do for a Dehy-
droginger in a battery -

Hydrarg. Arsenicos - Decomposes
and Sinc - Vitrifies -

Hydrarg. Tannic. Oxydul. Merck. Dont fuse – & Carbonizes and leaves bulky easily combustable charcoal –

Hydrarg. Acitic – " All evaporates away.

Hydrarg. Chloro-iodat – Decomposes suddenly goes at a critical point goes off in grial smoke

Strontium Oxide – Caustic Dont fuse

Natrium phenylate fuses + mercurates

Natrium phospho-Molybdenic Dont fuse

Natrium phospho-Tungstic Dont fuse

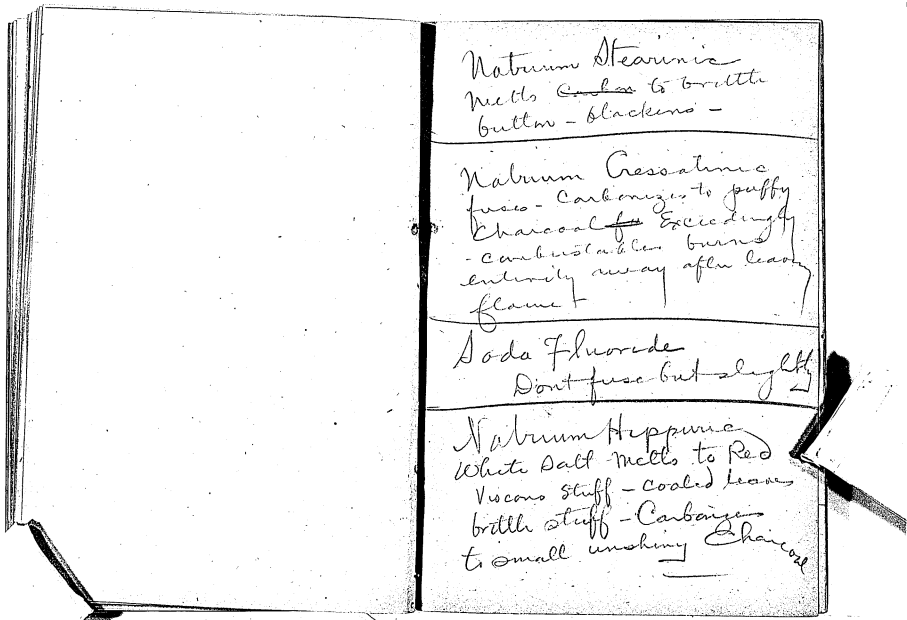
Natrium propylsulfuric
melts, dries

Natrium Salicylic -
slightly fuses

Natrium Santonic
melts to a Red brittle
resinous stuff - Crystals
originally colorless -
very brittle | Carbon residue

Ammonic Dada - Dont
appear to fuse - gives
smoke -

Natrium Succinic
melts slightly gives
hydrocarbon like Charcoal

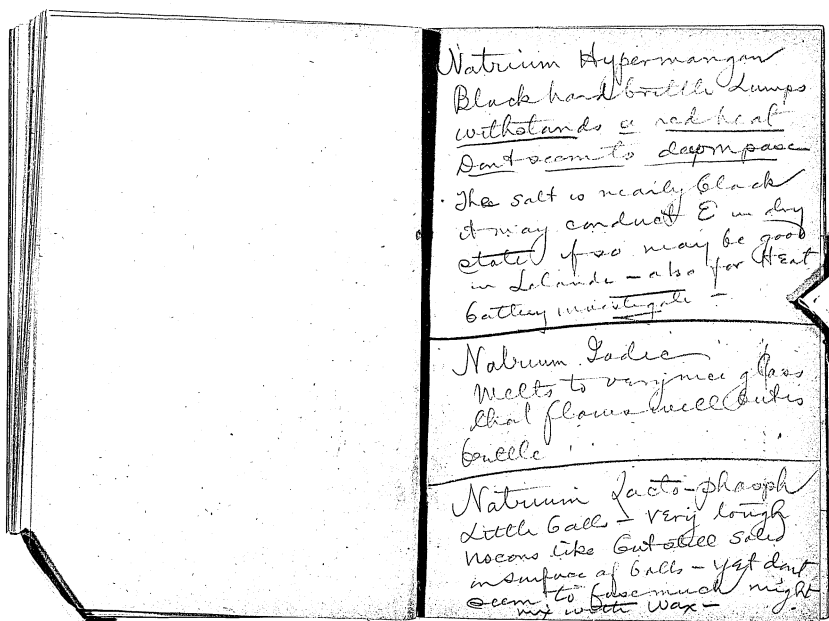


Natrium Stearinic
melts ~~Carbon~~ to brittle
butter - blackens -

Natrium Cressatinic
fuses - Carbonizes to puffy
Charcoal ~~ft~~ Excedingly
- carbonizable burns
entirely away after leaves
flame +

Soda Fluoride
Dont fuse but slightly

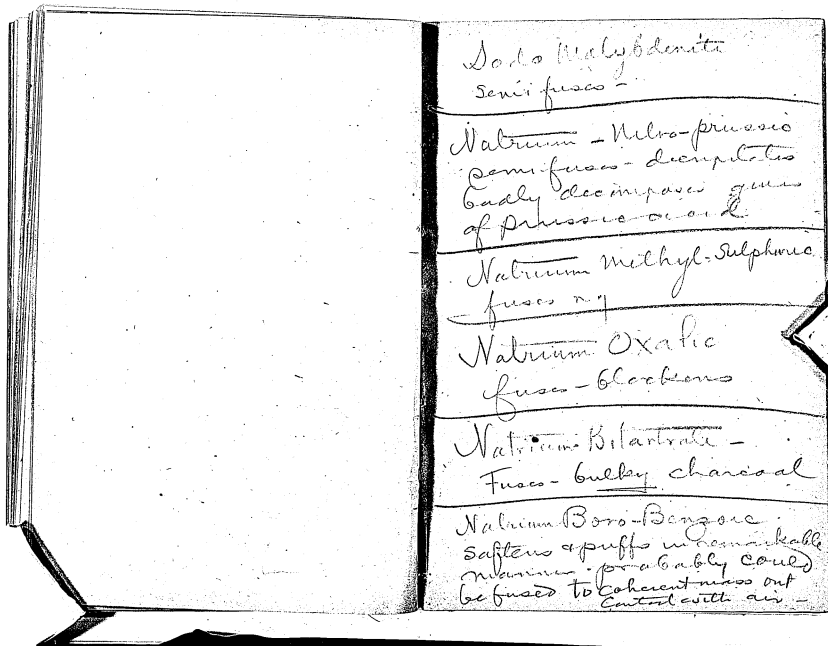
Natrium Hippuric
White salt melts to Red
Viscous stuff - Cooled leaves
brittle stuff - Carbonizes
to small unshiny Charcoal



Natrium Hypermangan
Black hard brittle Lumps
withstands a red heat
Dont seem to decompose
The salt is nearly black
it may conduct E in dry
state if so may be good
in LeClanche — also for Heat
battery ~~mixture~~ —

Natrium Iodic
Melts to very fine glass
Red flame bluish tinge
Crystalline

Natrium Lacto-phosph
Little Gall — very tough
Looms like Gut-like Salts
in surface of balls — Yet dont
seem to dissolve much might
~~mix~~ with Wax —



Soda Molybdenite
semi fuses -

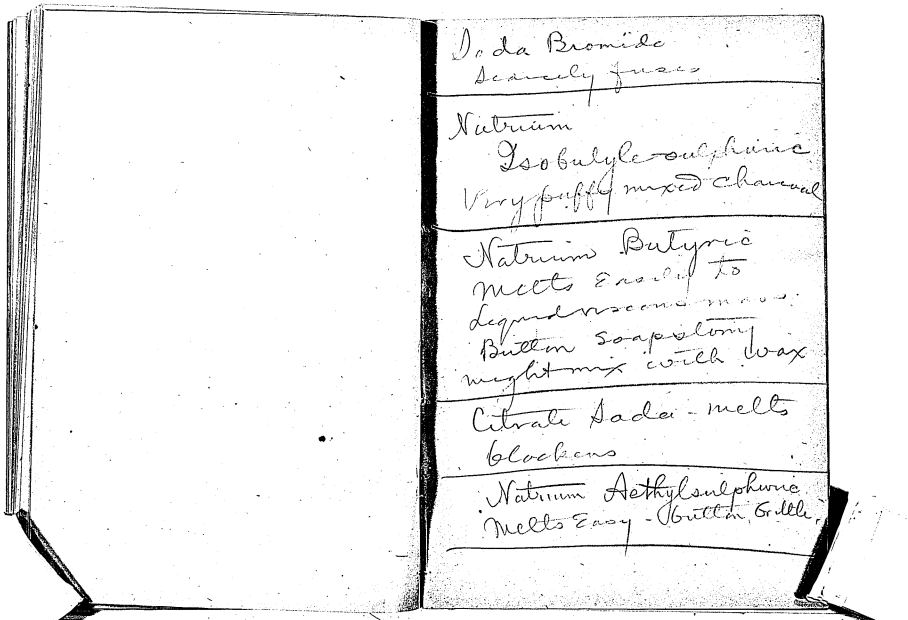
Natrium - Nitro-prussic
semi-fuses - decomposes
Easily decomposes
of Prussic acid &

Natrium Methyl-Sulphuric
fuses n.f.

Natrium Oxalic
fuses - blackens

Natrium Bitartrate -
Fuses - bulky charcoal

Natrium Boro-Benzoic
softens & puffs up remarkable
Natrium - probably could
be fused to coherent mass out
Contact with air -

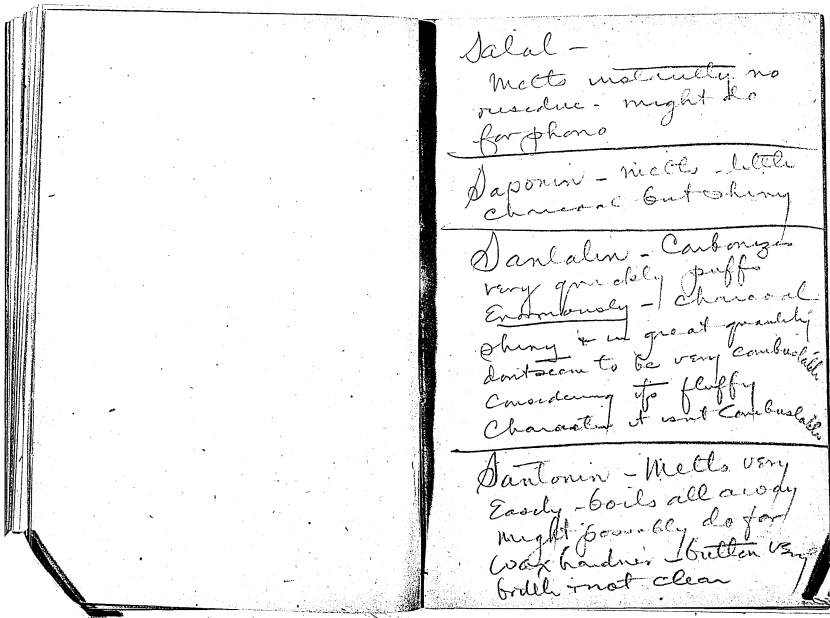

Soda Bromide
Scarcely fuses
Natrium
Isobutyle-sulphuric
Very puffy mixed charcoal
Natrium Butyric
Melts Easily to
Liquid-Second mass.
Butter soap-odour
might mix with wax
Citrate Sodæ - melts
blackens
Natrium Aethylsulphuric
Melts Easy - Bitter Taste

Natrium Arsenicos
Hard lumps - at high
temperature melts to
Reddish glass very clear
useful for smelting & glass

Natrium Benzoic
Melts to liquid butter
Rather Grittly soapy
might mix with wax

Salicin -
Acts just like
Sugar -

Saccharin - melts
acts somewhat like sugar
but Charcoal Easily
Combustable - not shiny



Salol –
Melts materially no residue – might do for phenol

Saponin – melts little charcoal but shiny

Santalin – Carbonizes very gradually puffy
Exothermously – Charcoal shiny in great quantity
Does not seem to be very combustible
Considering its fluffy
Charcoal it is not combustible

Santonin – Melts very
Easily – boils all away
Might possibly do for
Wax hardner / Butter very
Bubbly not clear

Bromide Silver – Melts Easily to Liquids which becomes Solid & Curls like Horn Silver gives shavings but is not as flexible & tough I thinks as Ag Cl. Thought it perhaps may be robbins properly melted

Argent Chromic melts to blackmass like the bromide but very brittle

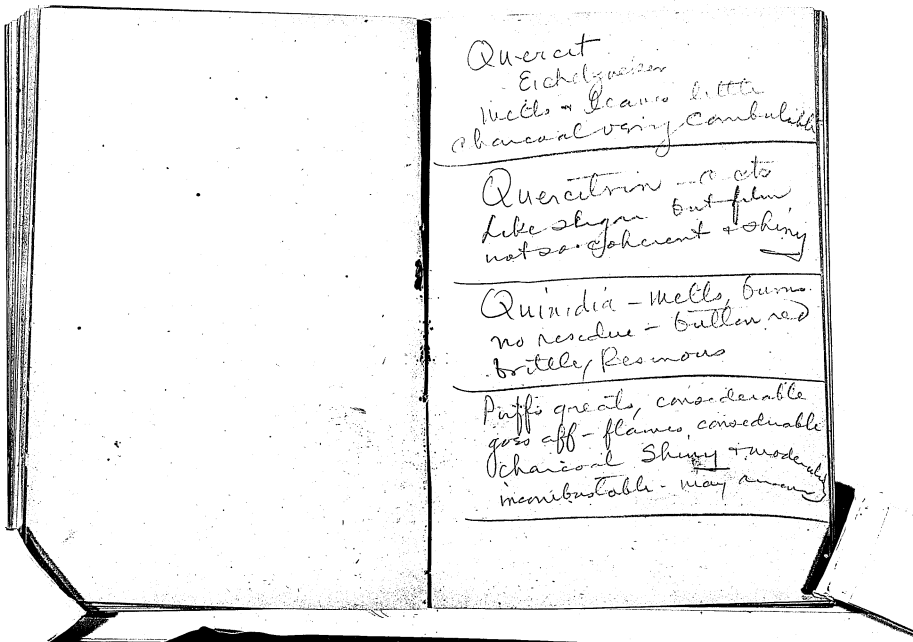
Iodide Silver melts like above but Solid mass powdery in Cutting

Argent Oxalic – decipitate
ade away

Argent phosphorus
Reduced to beautiful
metallic Silver at Red
Heat ought to be good for
many uses

Argent Nitric does
Dark change if chunk but
its finely divided it
goes

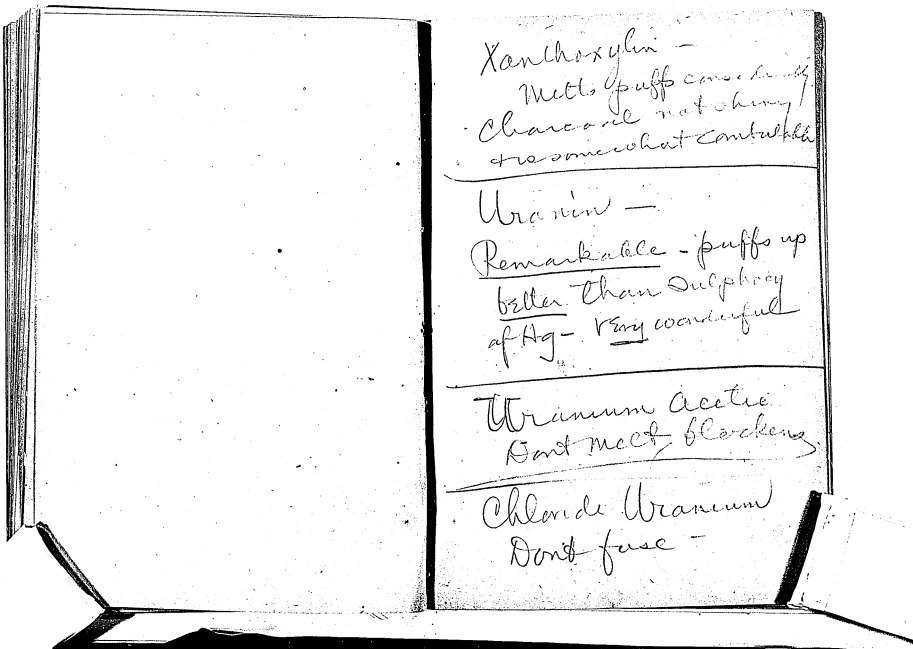
Argent Sulphuric
Melt + Reduced to Silver
at very high temperature
thunk it can be used for
Coating metal as it
Covers surface nicely


Quercit
- Eichelzucker
Melts + leaves little
charcoal very combustible

Quercitrin - acts
Like shyer but flow
not so coherent + shiny

Quinidia - melts, burns
no residue - bullen red
brittle/Resinous

Puffs greatly, considerable
gas off - flames, considerable
charcoal shiny + moderately
incombustible - may ammonia

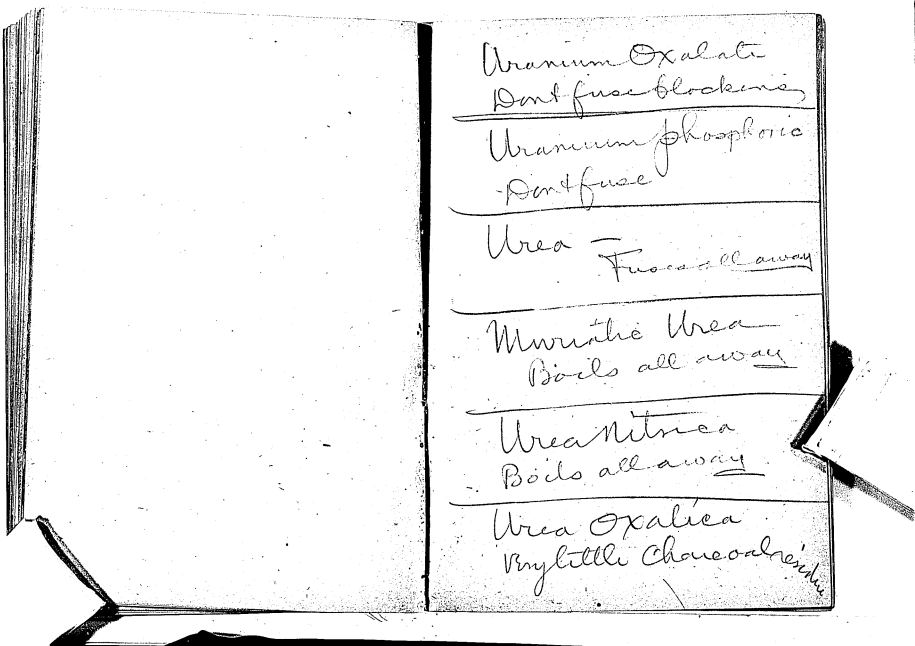


Xanthoxylin —
Melts puffs considerably
Charcoal not shiny
& somewhat contracted

Uranium —
Remarkable - puffs up
better than Sulphuret
of Ag - very cooperful

Uranium Acetic
Dont melt & Crackers

Chloride Uranium
Dont fuse —


Uranium Oxalate
Don't fuse blackens
Uranium phosphoric
Don't fuse
Urea
Fuses all away
Murathe Urea
Birds all away
Urea Nitrea
Birds all away
Urea Oxalica
Very little Charcoal residue

Triphenyl-Methan -
Melts all away boiling
bubble.

Tropacolin - Semi
fuses - bulky charcoal
Gut very Conductive

~~Tryp~~ Trypsin
Nearly all charcoal puff
little - Char shiny -
difficult Combustible
good - charcoal film
Somewhat friable -

Urethan - Ethyl -
boil, all away

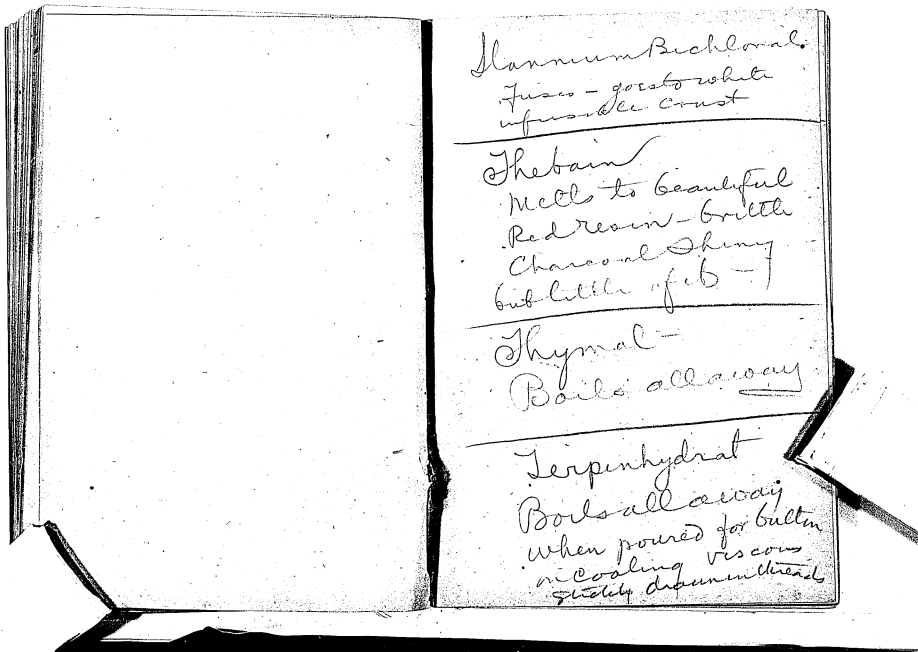
Urson -
Boils all away

Natrium Praeparatum
melt - H2O goes off then
a dark viscous bottle
mass - has some uses
after gets this state
lot white fumes go off

Natrium Sulphuric Oxyde
Decrepitates all away

Traubenzucker -
acts Chem Reacts like sugar - waisser free -

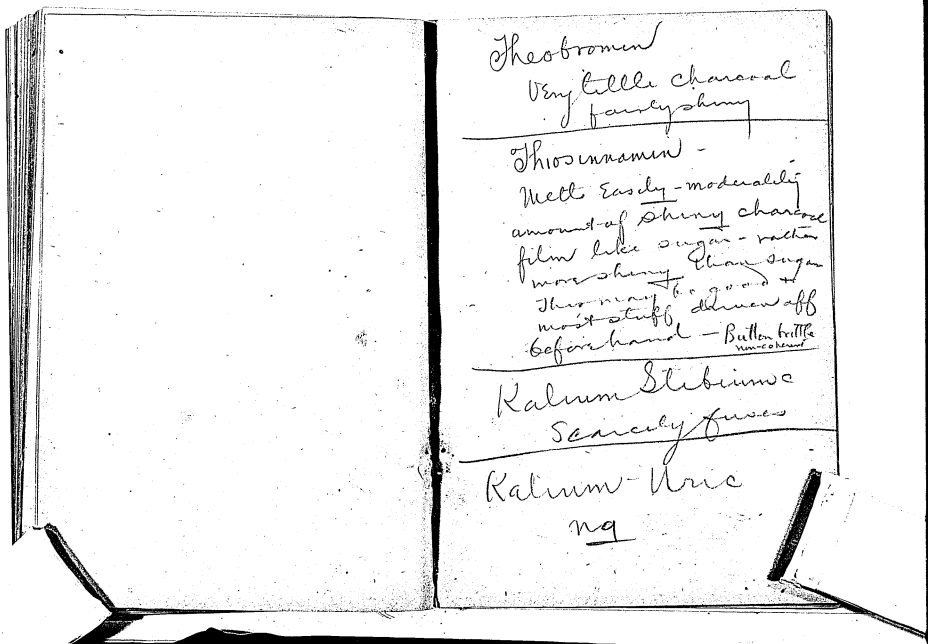
Chloride Thallium
Like - but more brittle than
Horn Silver
Cuts nice - Bulges


Glaucium Buchlorad.
Fusc - goes to white
upwards Coast

Thebaine
Melts to beautiful
Red resin - Brittle
Charcoal shiny
but little of it -

Thymal -
Boils all away

Terpenhydrat
Boils all away
when poured for Bulton
in cooling vessels
quickly drawn in thread

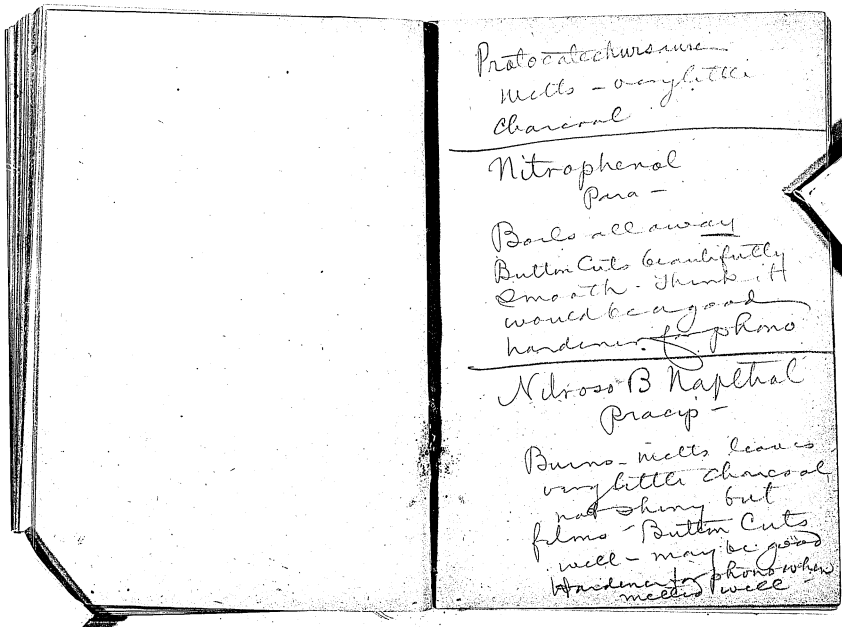


Theobromine
Very little charcoal
powder shiny

Thiosinnamine -
Melt easily - moderately
amount of shiny charcoal
film like sugar - reaction
more shiny than sugar
Thio-urea good
most stuff dissolves off
Beforehand - Butter trifle
uncoloured

Kalium Silicium
Scarcely fuses

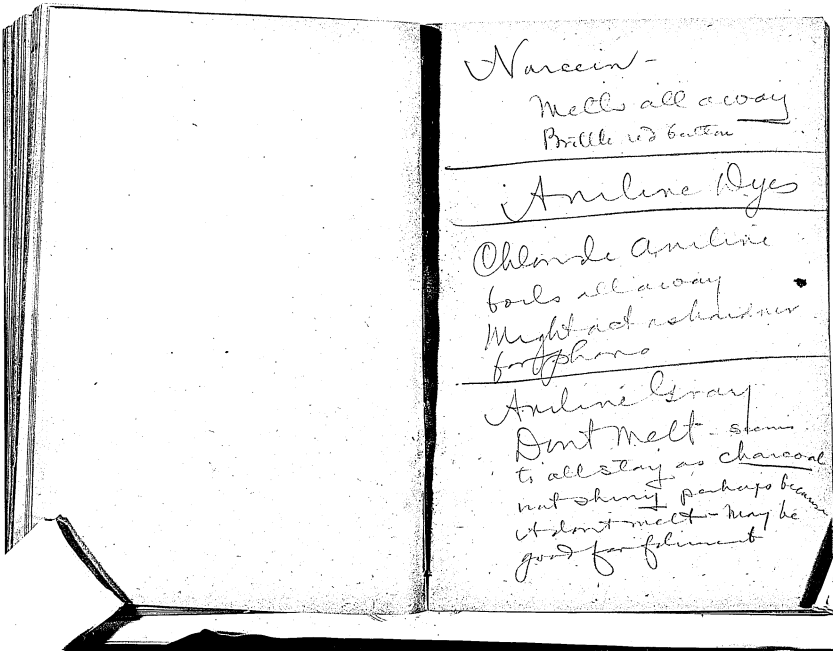
Kalium-Urie
Nq



Protocatechuraldehyde
Melts - very little
Charcoal

Nitrophenol
Para -
Boils all away
Button Cuts beautifully
Smooth - thumb nail
would be a good
hardener for phono

Nitroso B Napthal
Praep -
Burns - melts leaves
very little charcoal
not shiny but
films - Button Cuts
well - may be good
Hardener for phono when
melts sweet



Narceine -
Melts all away
Brittle with bottom

Aniline Dyes

Chloride Aniline
boils all away
Might act reducing
for phloem

Aniline Sevay
Dont Melt - stains
it all stay as charcoal
not shiny perhaps because
it dont melt - may be
good for filament

Anthracene

Blue Ethyl

Nearly whole left has
charcoal flames
high Cinnamon only
puffs charcoal very
shiny + incombustible

Black Sol -

Dont melt puffs very
little nearly all
Carbon - rather shiny
not very combustible

Brown - produced
all charcoal very
shiny + incombustible
Each particle [illegible]
Carbonize by itself +
Carbonizes - shiny as jet

Orange -

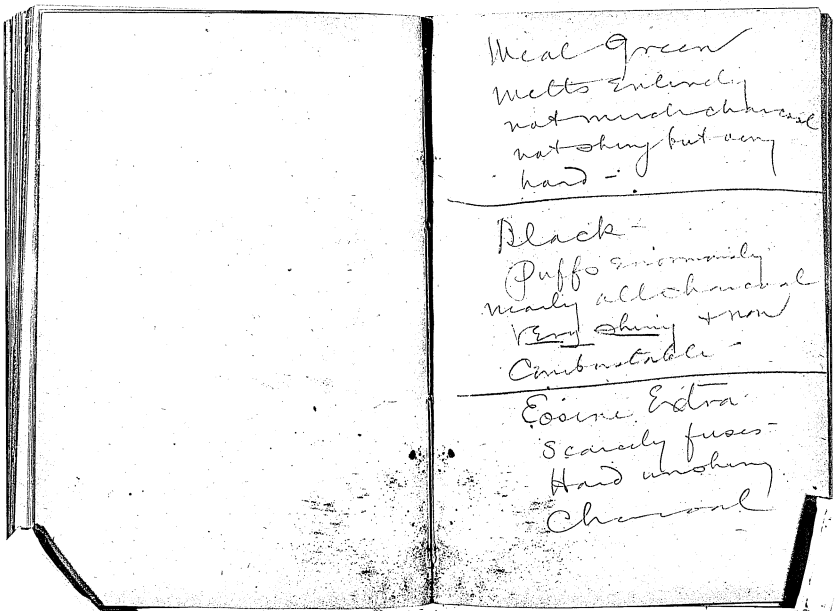
Puffs enormously
occurs to have phased in
it - charcoal coherent
burning shiny but probably
owing to fluffy nature
Easily combustible -

---

Fuchsine Crystal
melts pretty well
together - very hard
shiny non combustible
charcoal - necessity
- ash charcoal

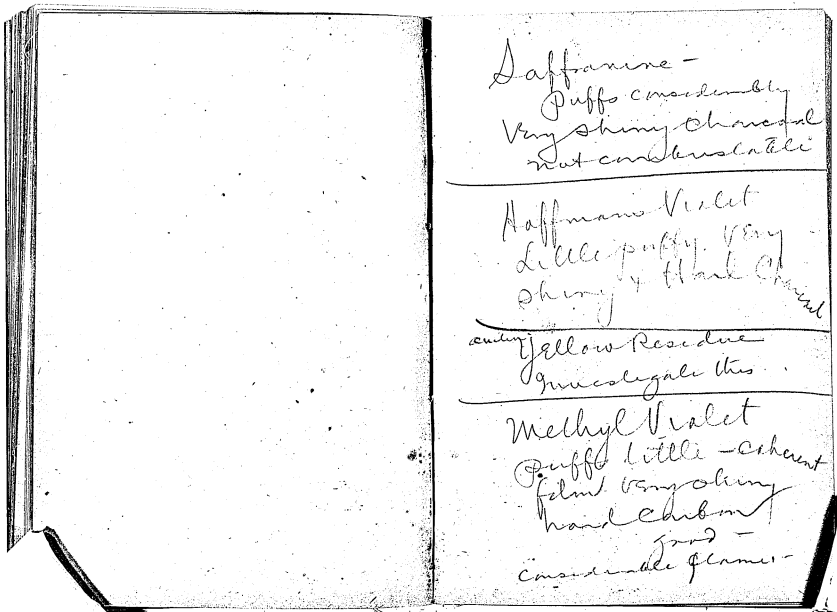
---

Eosin - carbon
like charcoal coherent
dont fuse - this it
is good -


Meal Green
Melts Evidently
not much charcoal
nothing but ashy
hard -

Black -
Puffs enormously
nearly all charcoal
Very shiny + non
Combustible -

Coarse Extra
Scarcely fuses -
Hard whitish
Charcoal

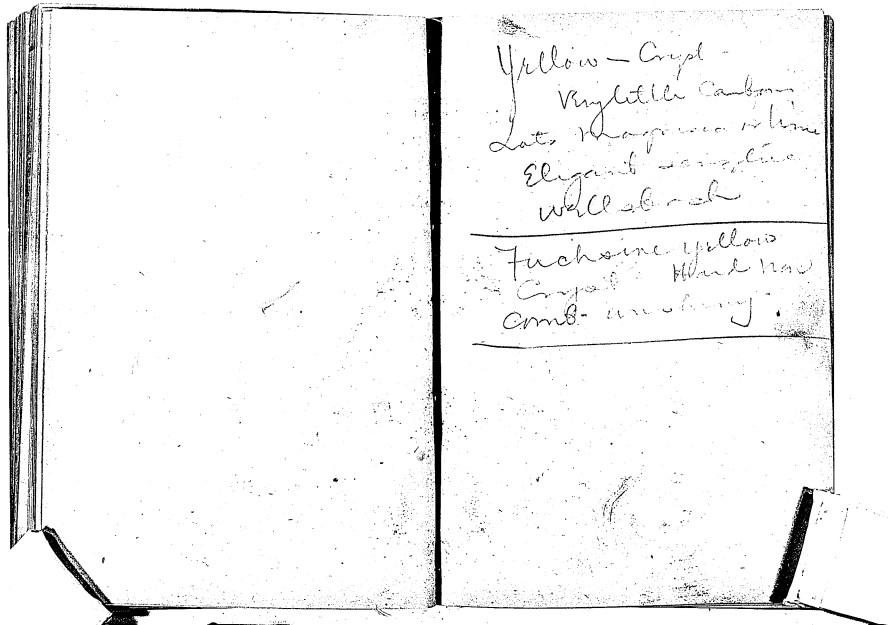


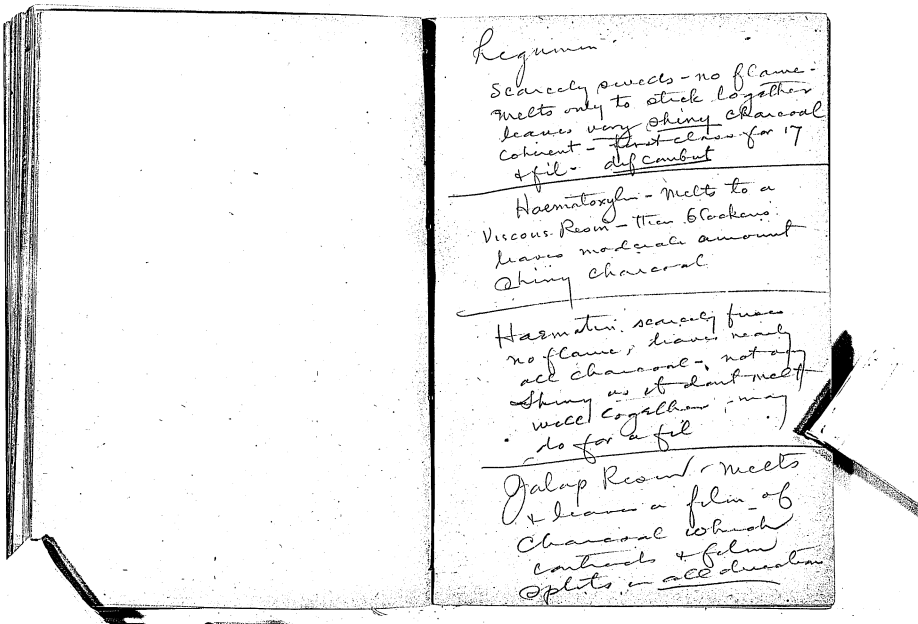
Daffarine –
Puffs considerably
Very shiny charcoal
Not combustable

Hoffmans Violet
Little puffy Very
shiny Flint Charcoal

Yellow Residue
Immediately this

Methyl Violet
Puffs little – Coherent
Film Very shiny
Hard Charcoal
Found –
Considerable glance –


Yellow — Cryst -
Violet like Carbon
Late Magenta shade
Elegant crystals
Wild-boar
Fuchsine Yellow
Cryst Hard Non
comb- mucky.



Legumin.

Scarcely powders - no flame - melts only to stick together - leaves very shiny charcoal - coherent - almost clear for 17 + fil - diffcombust

---

Haematoxylin - melts to a viscous Resin - then blackens - leaves no/scarce amount shiny charcoal

---

Haematin: scarcely fuses - no flame; leaves nearly acd charcoal - not very shiny as if dont melt - would coalesce (may do for a fil)

---

Jalap Resin - melts + leaves a film of charcoal (shrunk - cathode + film opposite in acd solution)

galapin -
Absorbs as much as gelap
Rises -

Aldehyde ammonia -
Melts nearly all away
very little charcoal
might possibly do for
a refrac Hardener

**Notebook, N-88-00-00.4**

This undated notebook was used by Edison, probably in 1888, for notes on chemicals and calculations on lamp sales and profits. There are also a few phonograph drawings. The pages are unnumbered, and the book has been used in both directions. Only 9 pages have been used.

N-(88-00-00.4)

Solvents for Carbonitic Material

Sulphocarbylamine - Horseradish odor very powerful - scarcely be-able to work with it except with respirator - 1st class solvent good as Chloroform -

Cumenal - tints solution only -

Cumadin - partial solvent by rubbing

Bendocumal - dissolves out brass Something - Nq

Cumial—

Dissolves out considerable matter

Nitrosodimethylin

dissolves nearly all of the Methyl substance yet undissolved or any part not sticky— Think it better than Methyl

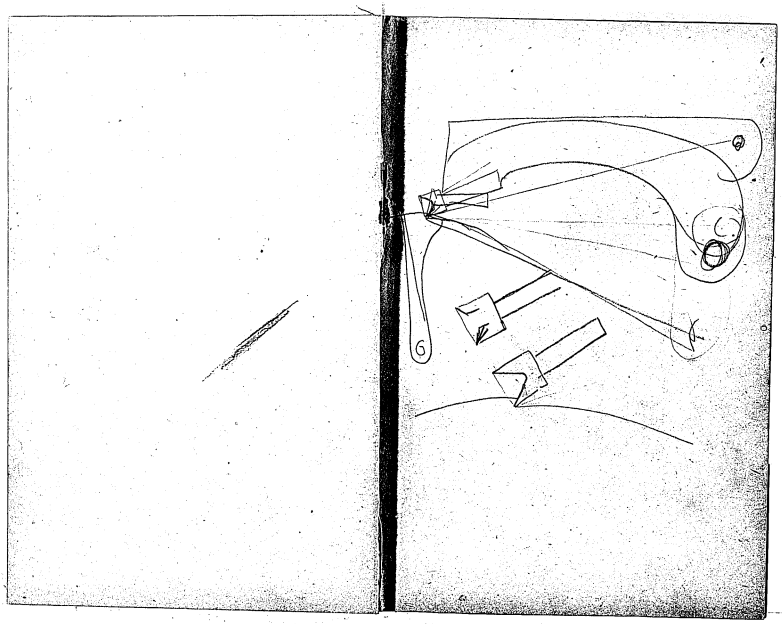
Propionic acid

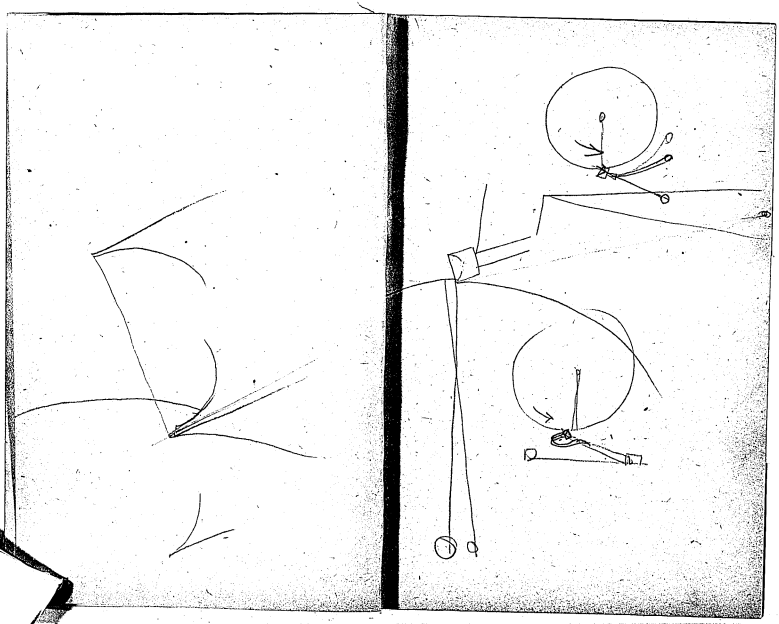
ng —

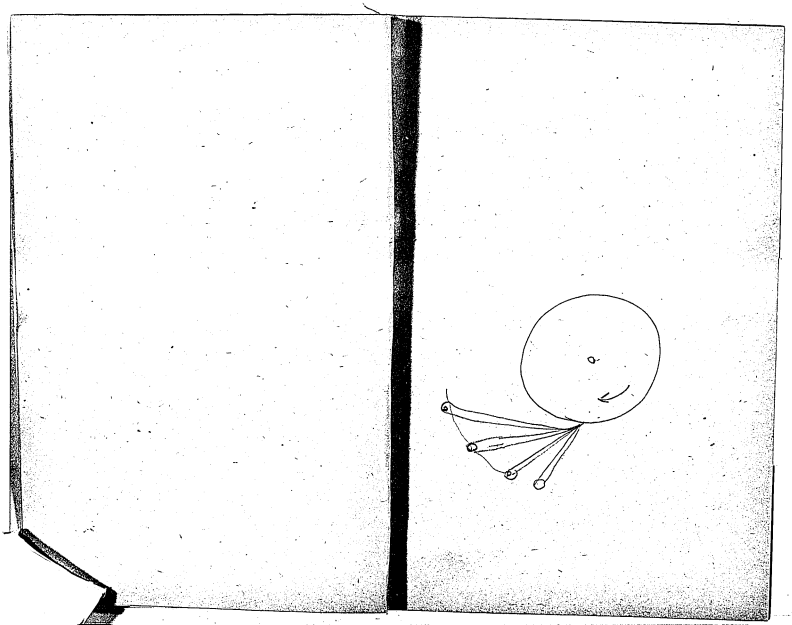
Pyrobrambenzamine

Smells like aldim Sucl a or glycum "Cyanbenz" not good Bedin

[THIS BOOK WAS USED IN BOTH DIRECTIONS.
THE FOLLOWING PAGES WERE FILMED FROM
THE BACK END FORWARD.]







Lamp Co

1350000 Lamps made for Light Co – Cost 25 c

$87000. sold at 40c bringing 140 000 profit 52,500 –

Light Co 350 000 profit 40 c $140 000.

Total profit LCo + Light Co

140 000
52500
$192,500

Making 210 000 more to make Complete ~~1000000~~ gives LCo profit Costing 18 c each gives Total Cost 100 000. at 40 c gives 123 000 profit to Lamp Co

Selling the 560000 for 50 c or 10 c additional for Light Co gives Light Co ~~300000~~ 175000 profit. ~~325000~~ added to Lamp Co profit

123 000
35000
560 000
140 000
700 000
175 000
525 000

800 000 Lamps sold Co Illuminating reduction from 25 c Cost now to 18 from increased output Cost from increased output gives 7c on 800 000 or 56000 Other added Co 179 000

350 000
210 000
560 000
18
44 800 000
56 000
100 800 000

560

560 000
40
22 400 000
100 800 000
123 200 000

**Notebook, N-88-01-03.1**

This notebook was probably begun in 1887, but the first dated entry is for January 3, 1888. All entries are by Edison. The undated entries consist of notes on substances, taken from the third volume of Watt's *Chemical Dictionary*. The dated entries include drawings relating to phonograph recording surfaces, the pyromagnetic generator, and electromagnetism. Following these drawings are undated notes and drawings concerning electromagnetic devices (including condensers and a diamagnetometer), dynamo armatures, electric railways, filaments, wax compounds for recording cylinders, and a motograph telephone. Finally, there are notes and drawings from May 1888 relating to the design of an electric typewriter and to battery experiments. The spine is labeled "68." The pages are unnumbered. Approximately 110 pages have been used.

XE172 N-88-01-03.1

Notes from books.

4

Watts Dic. Chem. Vol 3rd p. 1.

Haemaphein: from blood, does not melt when heated

---

Haematein, Watts Chem 3rd Val p. 1 - "$C_{16}H_{12}O_6$" is from Haematoxylin, bulky brown red mass when dried deep red color metallic lustre, Sol $H_2O$ Carbonized by heat =

---

Haemaloxylin Watts Chem 3rd vol 1 p. 4 from Logwood - $C_{16}H_{14}O_6$ — Tastes like Licorice - Carbonized at High temperature Chlorine converts it into an uncrystallizable mass — It may prove that these Chlorine Compounds may prove as Carbon better than the org things.

Darkphotography - Watts 3rd vol Reg p 102 - Selenium when Therm raises to 96 or 97 - Suddenly raises itself in temp. 200 @ 230 after this it has a metallic appearance

Hence, Coat a plate with an excessively thin film of Prepared Selenium, on a non-conducting plate, Raise temperature to within 2 @ 3 deg of this critical point in the Camera, Then let radiant heat strike on, more or less strong on the S will carry it beyond the Critical point & thus produce a dull surface (1) metallic while that not acted on by radiant heat will remain black obsidian like - Thus we should be able to photograph by invisible heat.

Sulphur does something - rises to 98° then suddenly to 110

English - Wheat is Barley Sugar ?

Hedric Acid - Chars without melting - Watts 3rd Vol Reg p 138

Hunt up Mulder's Romney Vegetable albumen a body resembling Cellulose

Glycyrrhizin – Eng.

Glyoxaline. Stand 447 Conty
See Watts 3rd Sup Vol 8 part 2nd

See Eng Cish – Melting pt Paraffin 49.5° of Cerosin 71.35 – get some latter wax –

Dry Sulphide Copper in Lelande Cat also Calcopyrites

Carbamate of Ammonium is all gaseous when heated – good for residual – but may have vapor tension at 62 ng – look it up

Carb-Manganeseae – decomp at 70.c
$CO_2$ for residual.
~~Stand Encyclopedia~~

Try Sulhead in Lelande + Coat
in acetate + $SnCl_2$ + $H_2O$

fine some heavy metallic salt
insoluble in water which can
be separated in a wire + on melting
leads in oxide — Try Chloride
Lead fused etc

get 10 Lbs each kind Humus.
Rotten wood, Semi rotten wood
Mould.

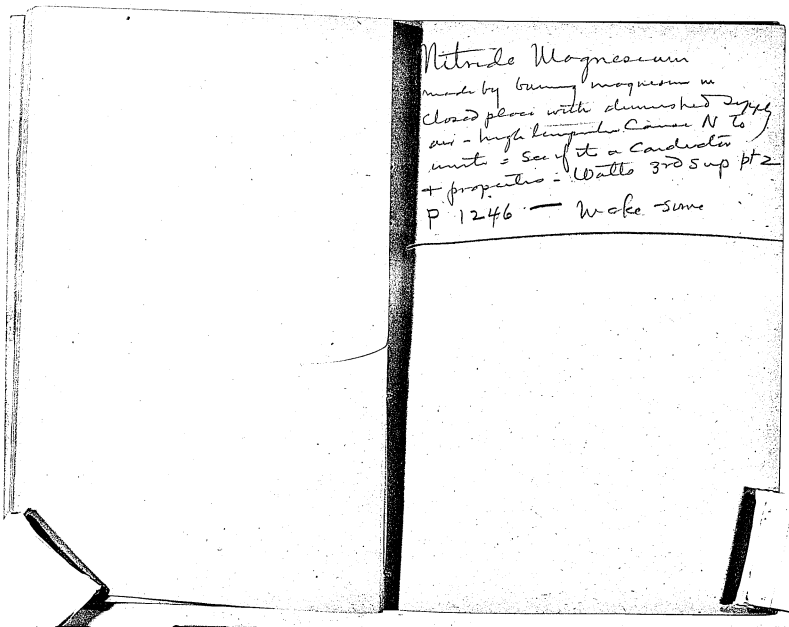
Phenyl diethyl
Phenyl-azonium-Bromide —
Watts 3rd Supp. pt 2nd p 1051 — decomp
without melting Orange Crystalline

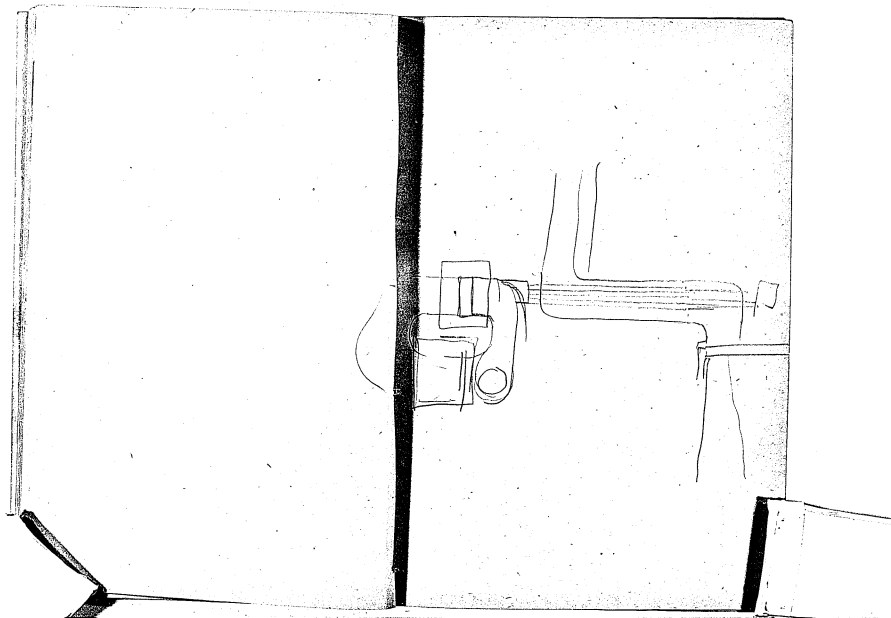
Solid ditolyl in a Exhausted Combustion tube. $C_{14}H_{14}$ - heated to 500 C remains unaltered for many hours but ultimately decomposed with deposition of Carbon - This might be good for also for Carbon gas in side tubes. If Limp -

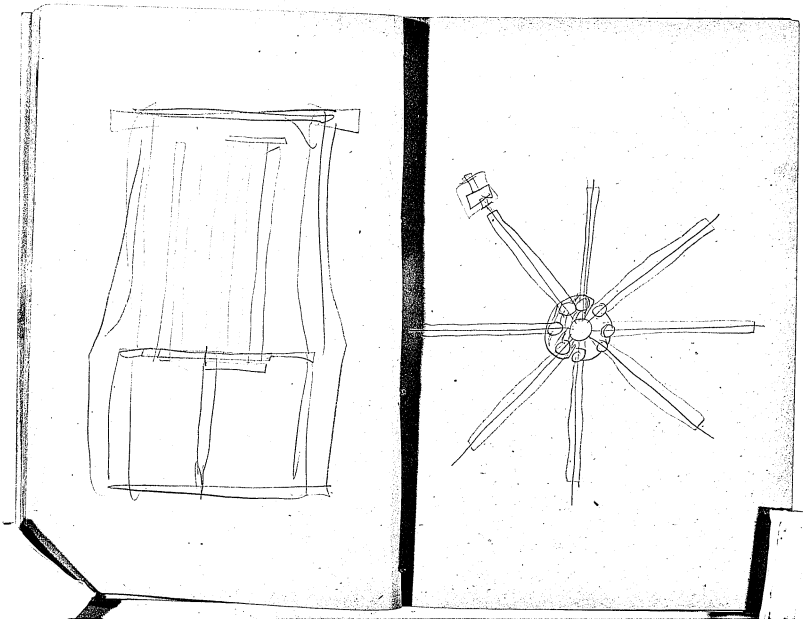
Mannite Dulcite, Sugars for 17s -

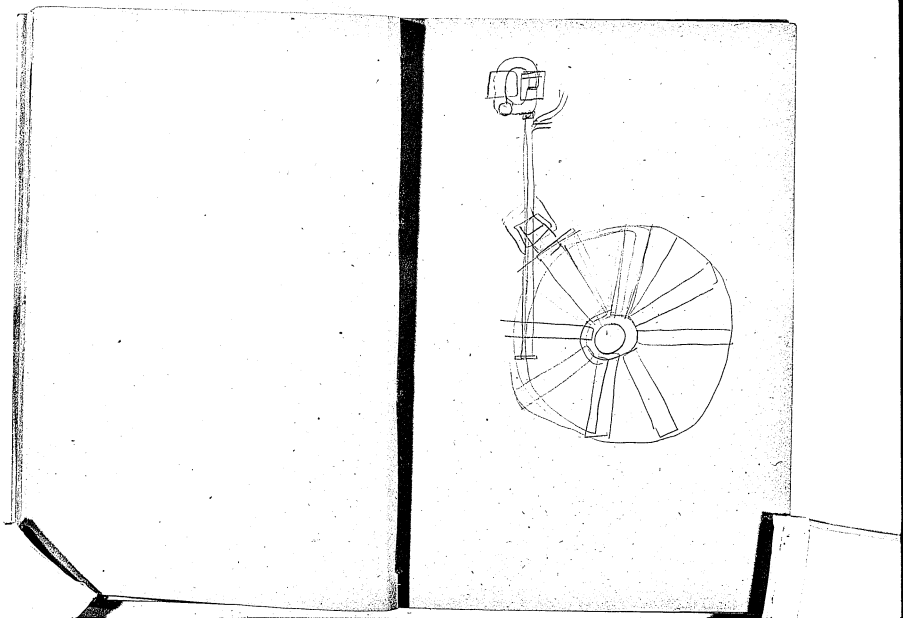
Action Sugar with Chlorine Bromine, Iodine, Hydrogen Iodic acid - Etc

Kinoin - Watts 3rd Supp 2 p1157 Kino red leaves great quantity Charcoal


Nitride Magnesium
made by burning magnesium in
closed place with diminished supply
air - high temp in Carbon N to
unite = Secure to a Conductor
+ properties - Watts 3rd Sup pt 2
p 1246 — Wake Some

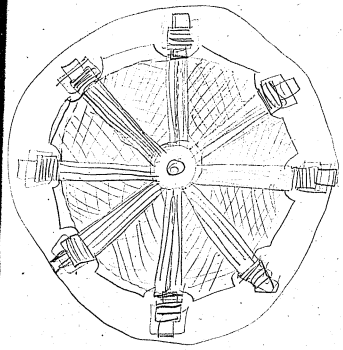


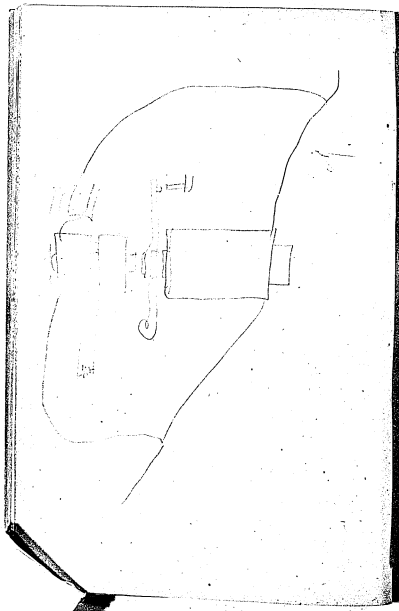


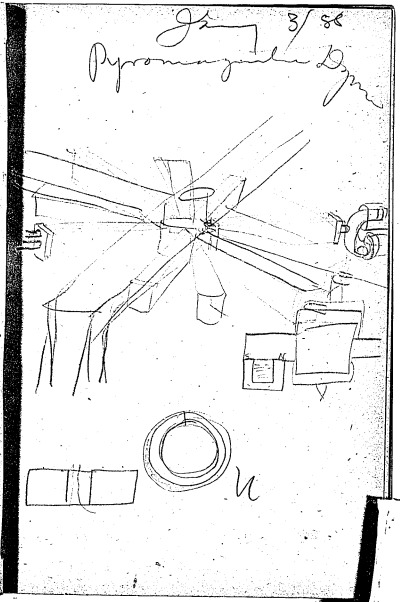


Jan 31-88

Pyrowax Dynamo

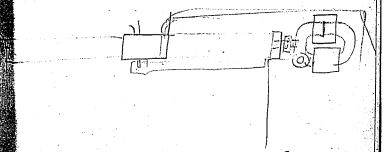


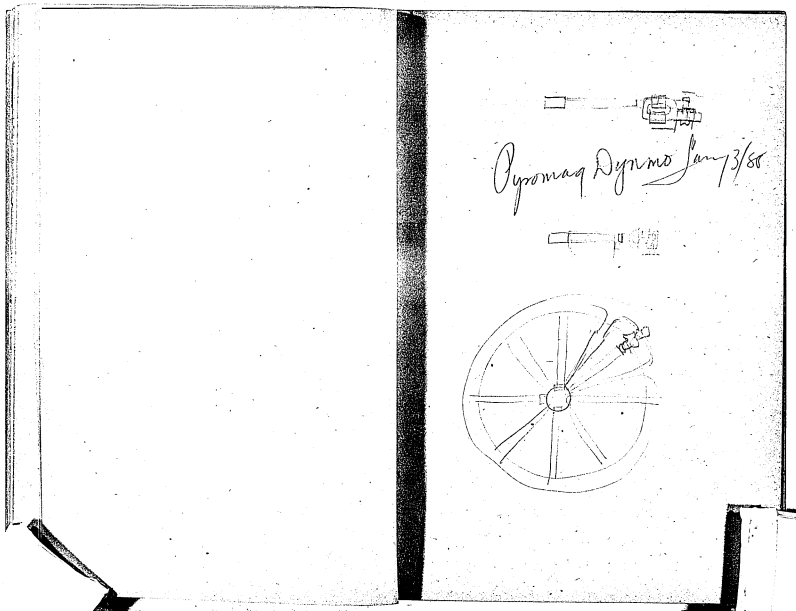


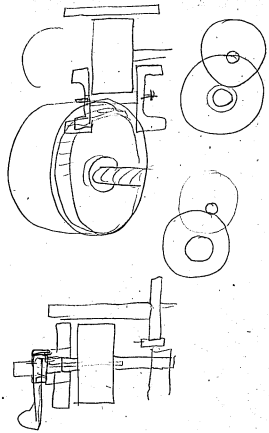

3/ 8c
Pyromanjetic Dyn

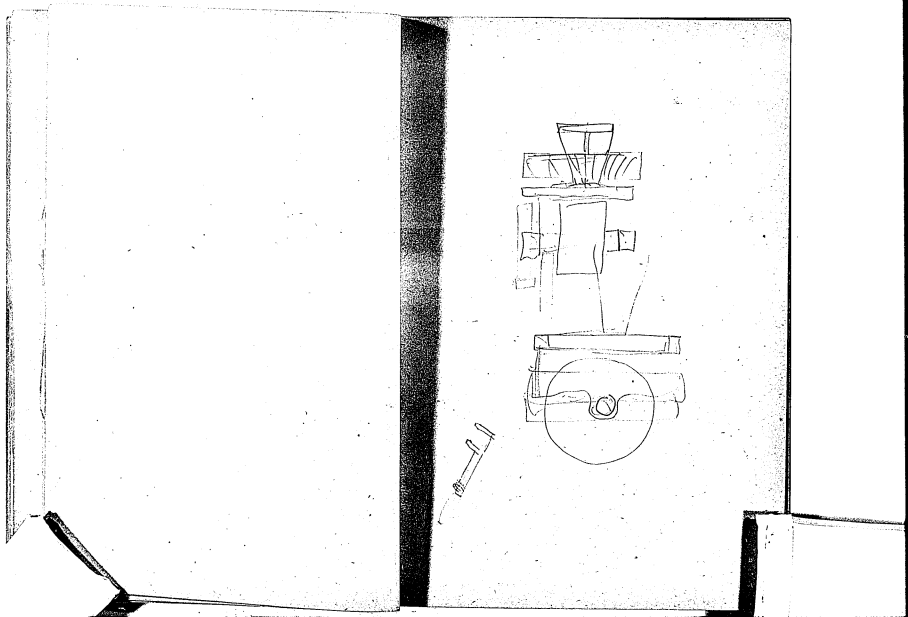
January 3rd 88

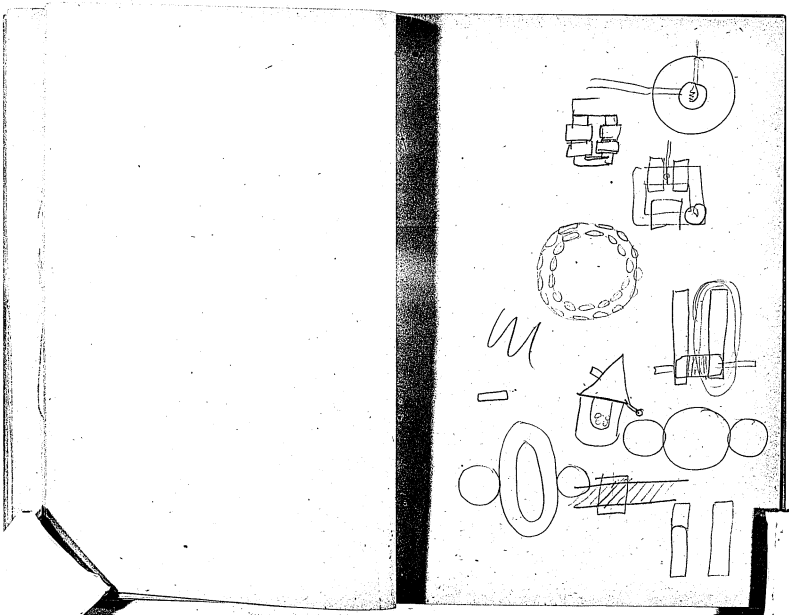
Pyromag Dynamo

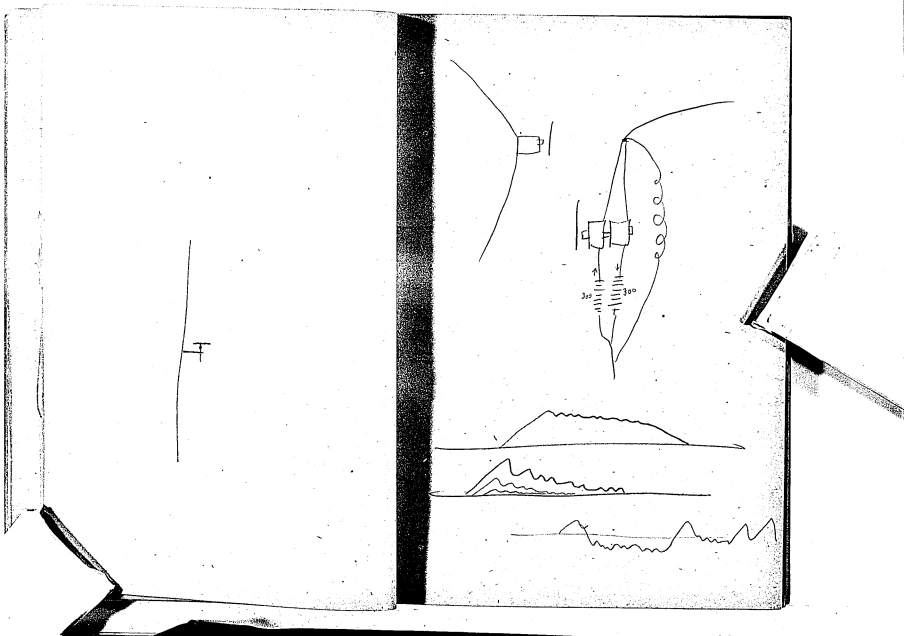


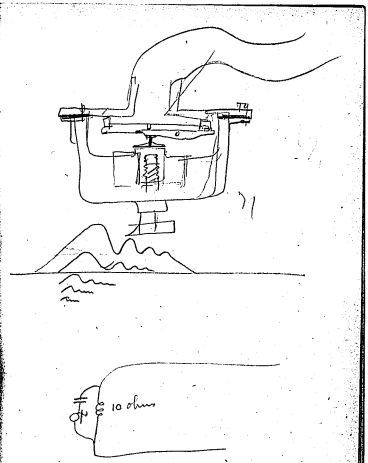




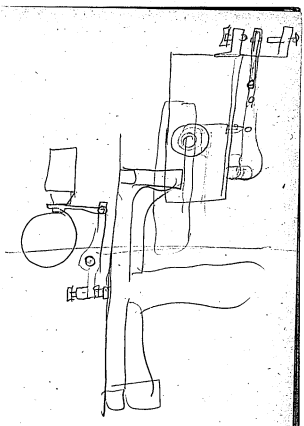


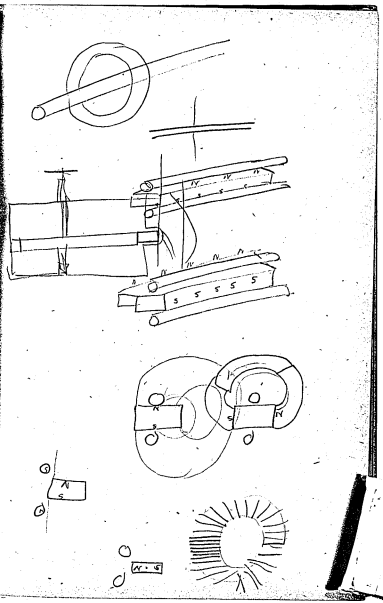





10 ohm

Borium

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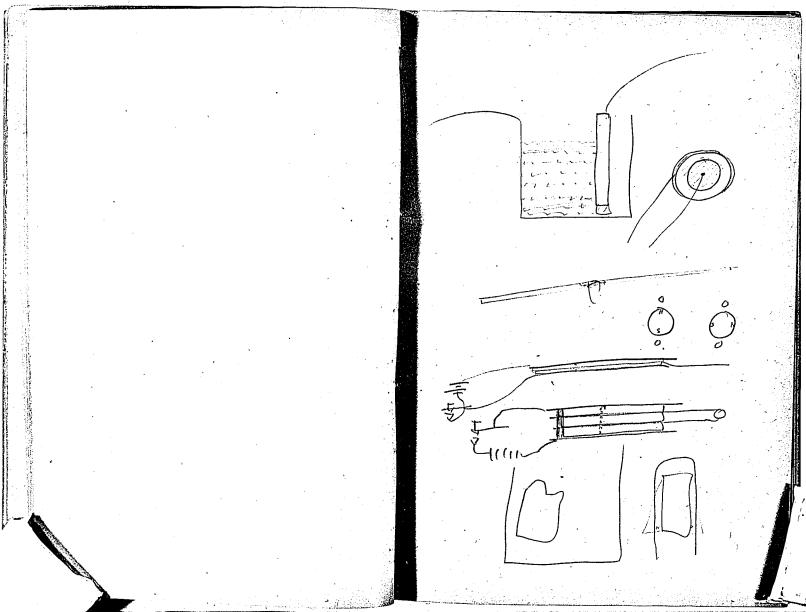
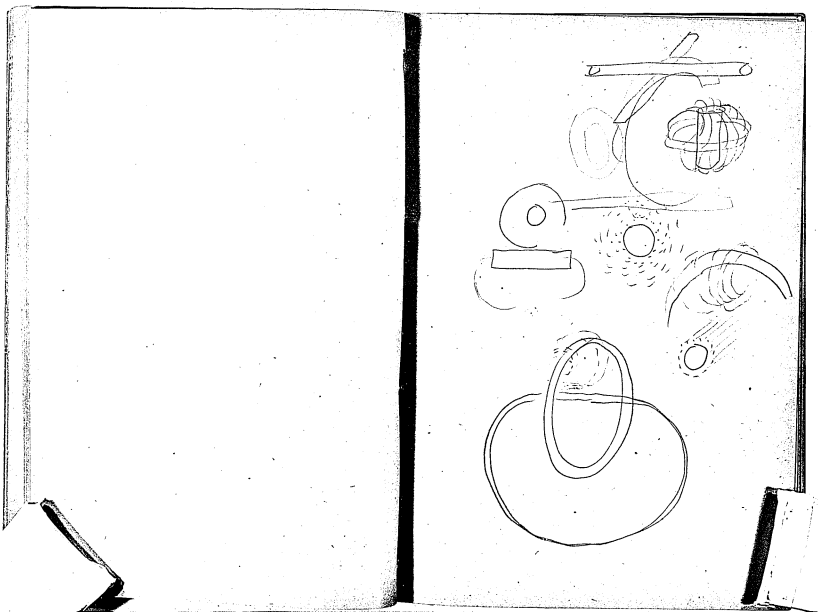
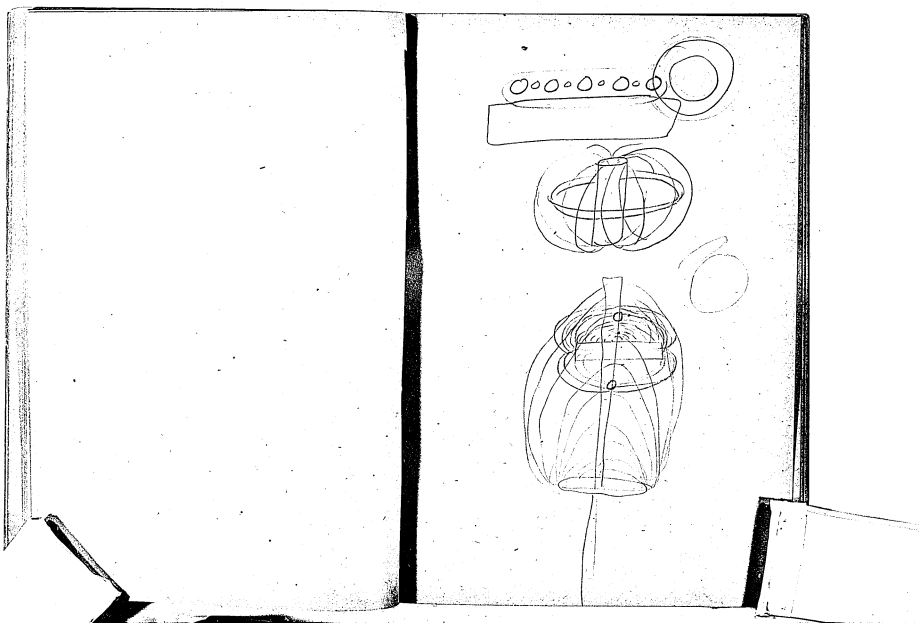
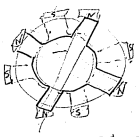
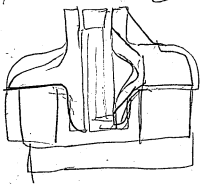
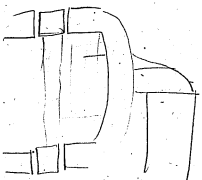


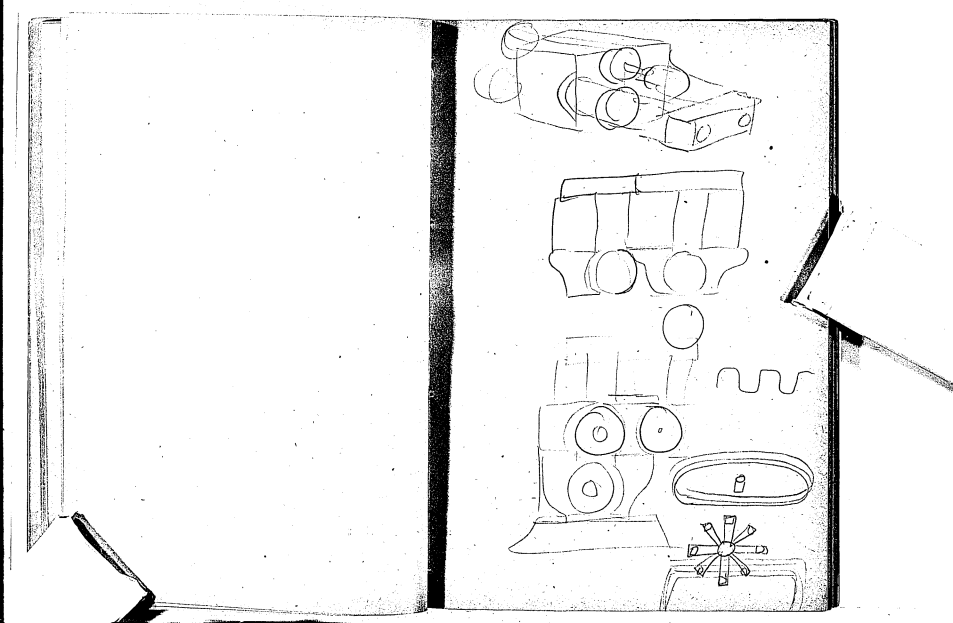


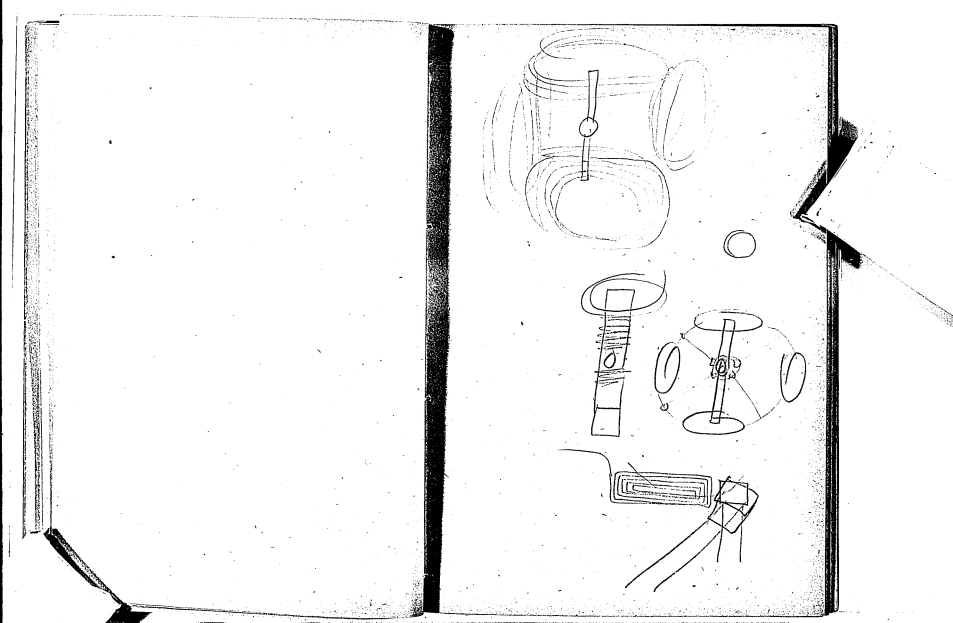


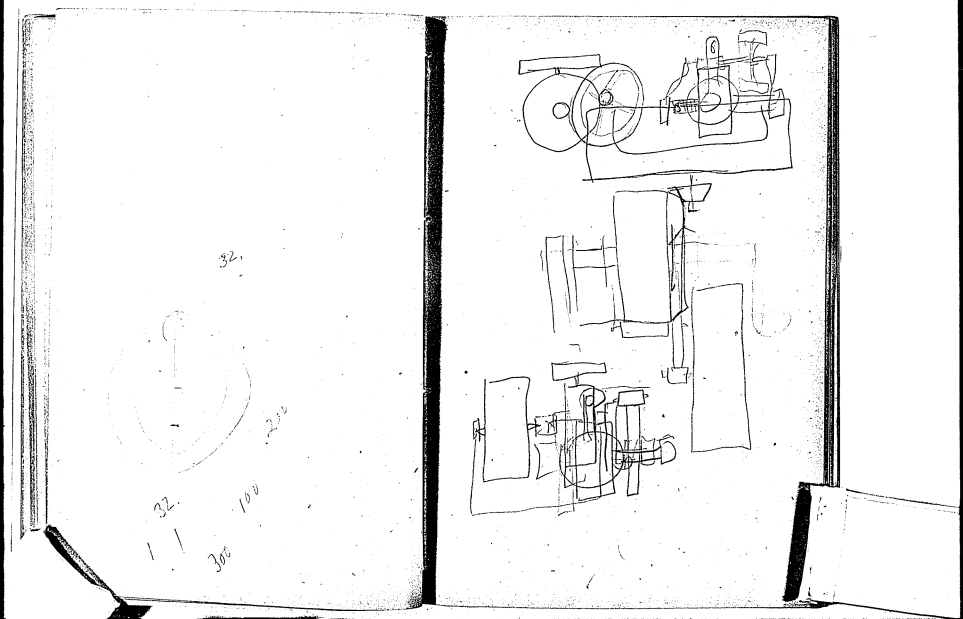


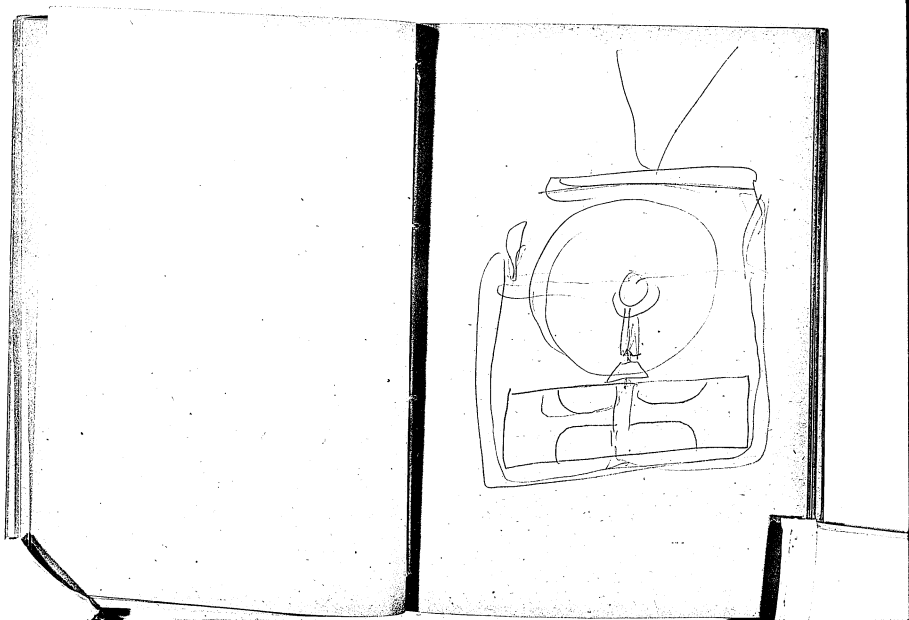


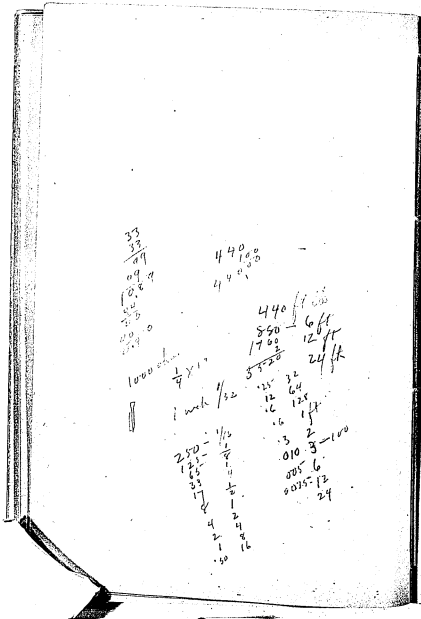







32.
32.
100
30°





Condensers with unfamiliar dielectric, dip foil in Varnish Collodium rubber, gutta p asphalt ozokerite oil, Oxidize them. Try buffed Cop foil oxidized. Try balatta, or Cozumero — dip exceedingly thin solution dilly wedge so whole will be 1/2/1000 thick

Second, Oxidized Cop foil 50 feet surfaced with polished iron heat, also with platt, silver + others makes something worth while. If Red hot Copper on Cold iron gives $\frac{1}{3}$ Volt why could not do overnight commercial machine by forming Good Element like a Condenser — (1c) several hundred feet surface,

24 sq feet obtained gives 3520 ft lbs — of Florida Canteen was $\frac{7}{8} \times 1/32$ or a necessary of 1000 ohms

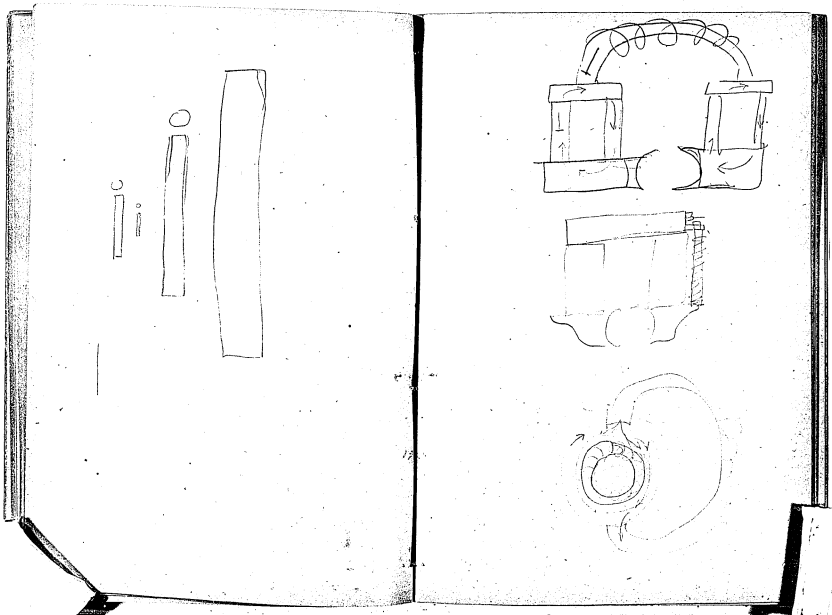
Try pressing Cement with heat

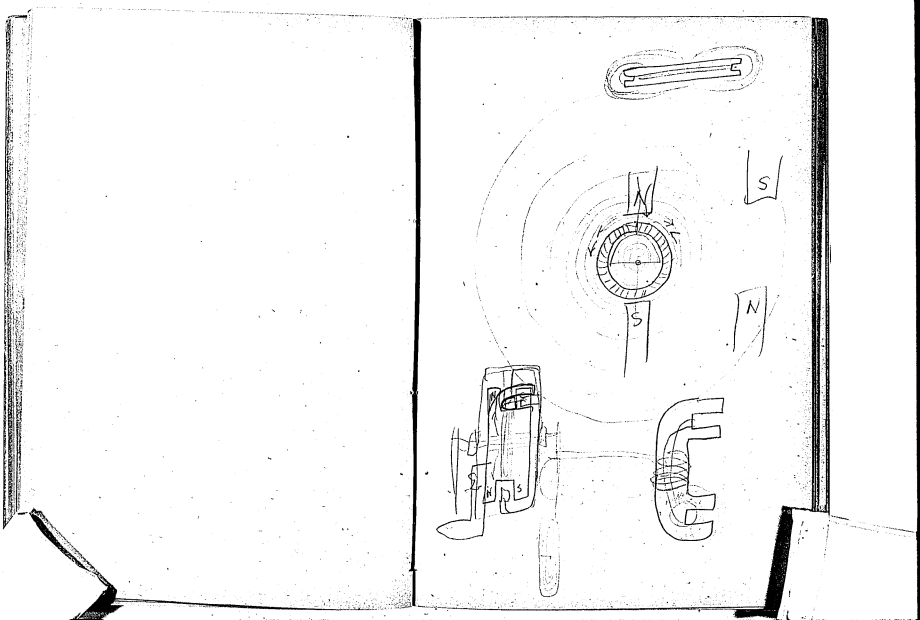
Sulphides (1d) Sulphiding surface of metallic foils may be like Condenser principle. Should give powerful effects.

2. 1/64
4 1/100
8 1/200
16 1/400
32 1/800
50 — 1/1000
100 1/5000
1/5555
200. 1/10000

Try soaking preliminary ashed fibres in 10% Hydrofluoric acid to dissolve ash.

Artificial Hard Beeswax
White Wax - Try + White Carnauba + add one of these to reduce brittleness to proper point + call it White Wax




S
N
S
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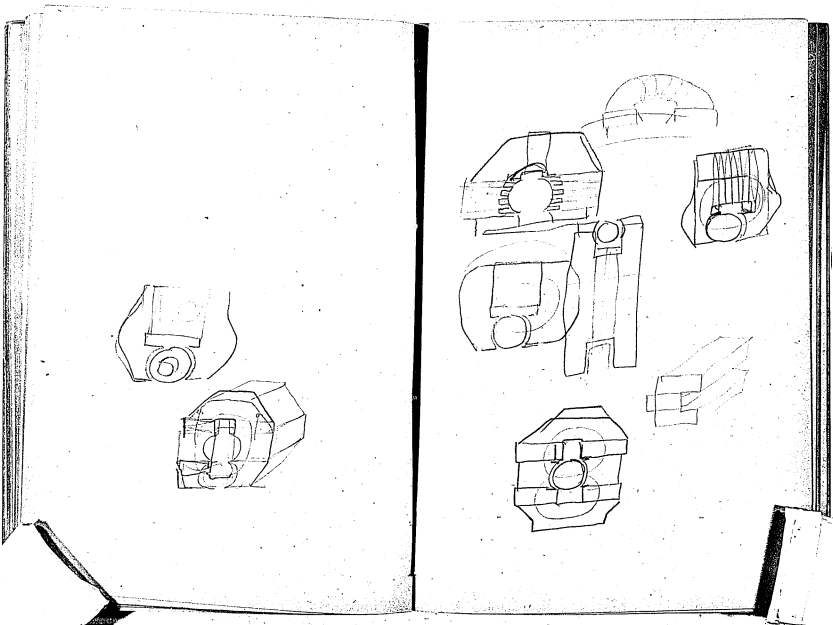
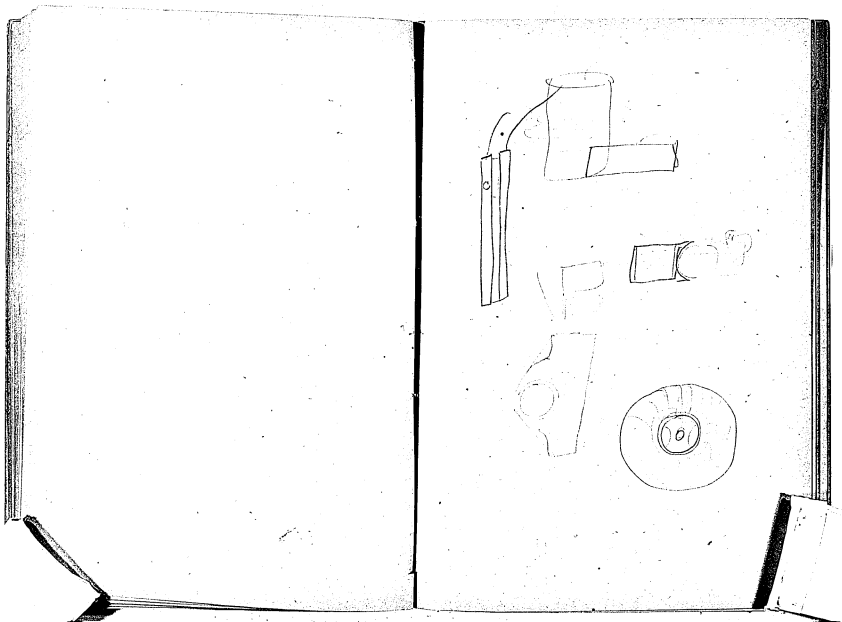
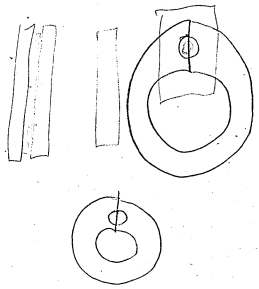
S
N

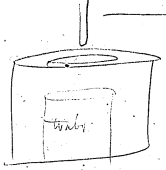




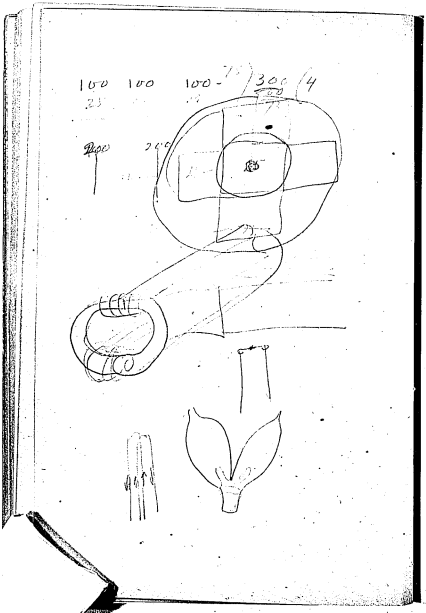


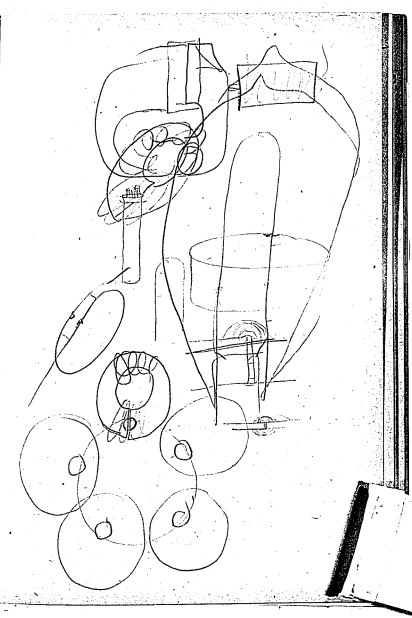
Try Copper + Copoxide with Carbon in fused red hot Caustic Soda with. also other fusable salts.

Carbon + Copper with black oxide between pressed hard boxwillow + heated in non oxidizing atmosphere, Cu. reduced by Carbon with C to CO —




Harden a piece steel in water inside powerful helical magnet powerfully —

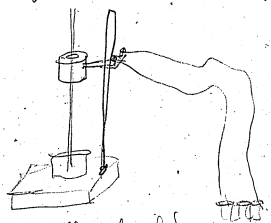

100 100 100 300 4
23
2400 2400



Try Naphthaline as a Lubricant
This ought to work better than any oil.

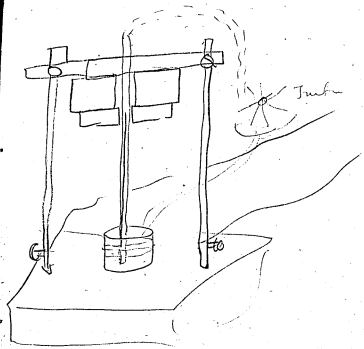
It might be dissolved in Benzol
Etc & drops from an oil Cup.
The Benzol Evaporating leaves
the Naphthaline on the bearing
There are other Hydrocarbons that
might work Anthracene

Diamagnetometer,



attraction of Capillarity of drops by
repulsion due to diamagnetism
over

Diamagnetometer




Try also Iron Solution - perhaps it will pump them up + so work better. Try great variety of Solutions for Electromagnet.

Measure Electrostatic Capacity & other phenomena between 2 layers separated mechanically from each other, Creasote results, acidulated Water & oil etc

---

See Miller Chem Phys p 95 Important point on Tannin

Use very dilute Tannin & one side very weak alkali on other. then will get result, - The Osmotic Substance must be acted on by one of the things. one thing on one side must be capable of Combining With the other thing on other side & the Solution act more energetically as they are more weak

Whatough -

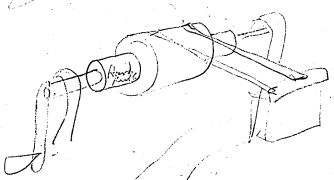
Try all alkaline oxides (a)
Baryta, Lime Carbonate Lime
also Slaked Lime, Carb Baryta,

Soak Reg Chalk in Alkaline
glue fish + gelatine, Try
Kaolin with very very little
alkali water,

Make Cylinders of very concentrable
Urine & see very concentrable
solution,

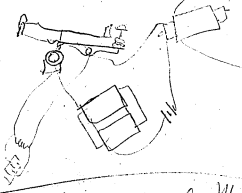
Try Fused Borax - Microcosmic
Salt, also glass with great
addition Soda

Investigate further the Chalk Cutter

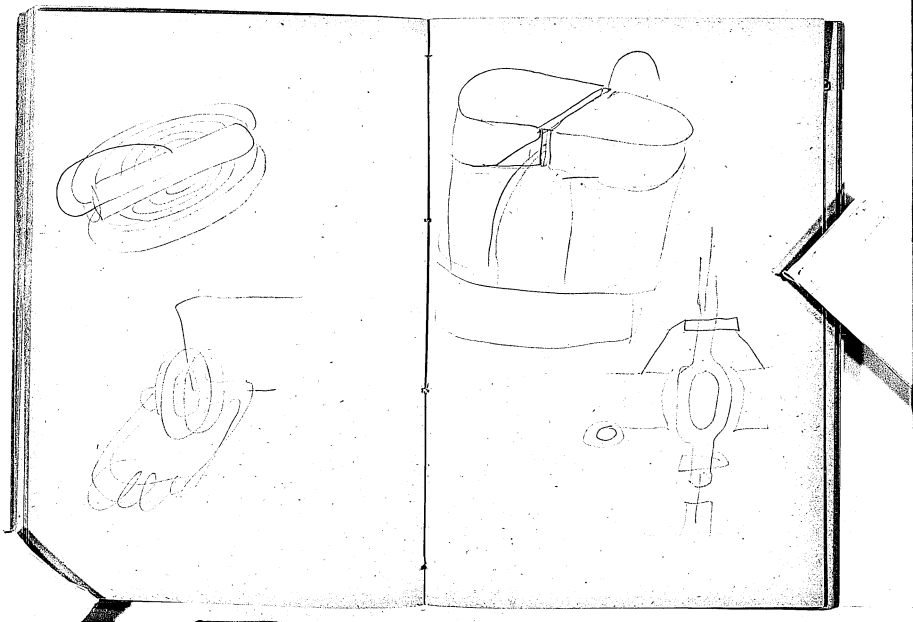


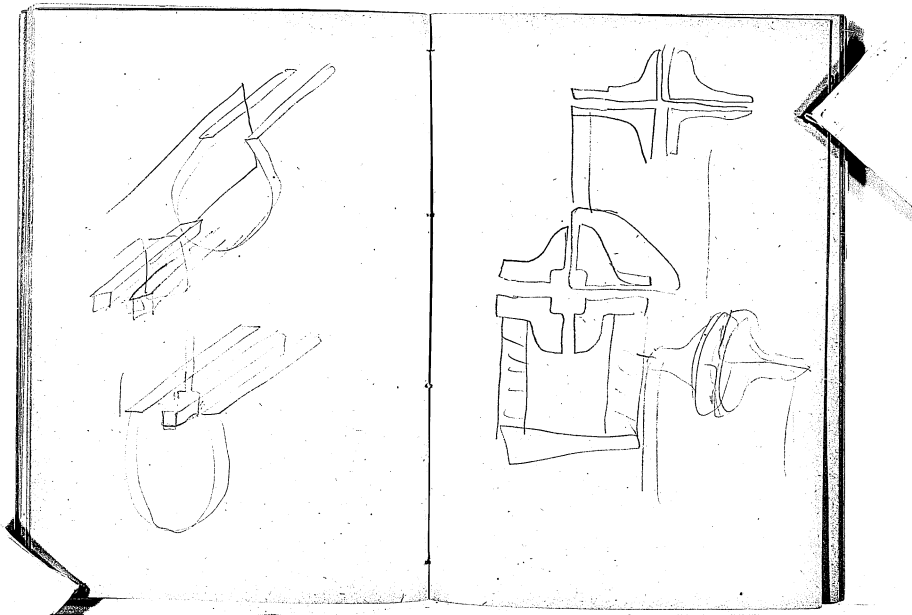
Measure R + EMF also dimensions
R + Sec of Emf recap up also
hold still + touch top of spring
with hot wire to disturb
Capillarity + Nano gap
Current - Sec of Emf followed
by Speed

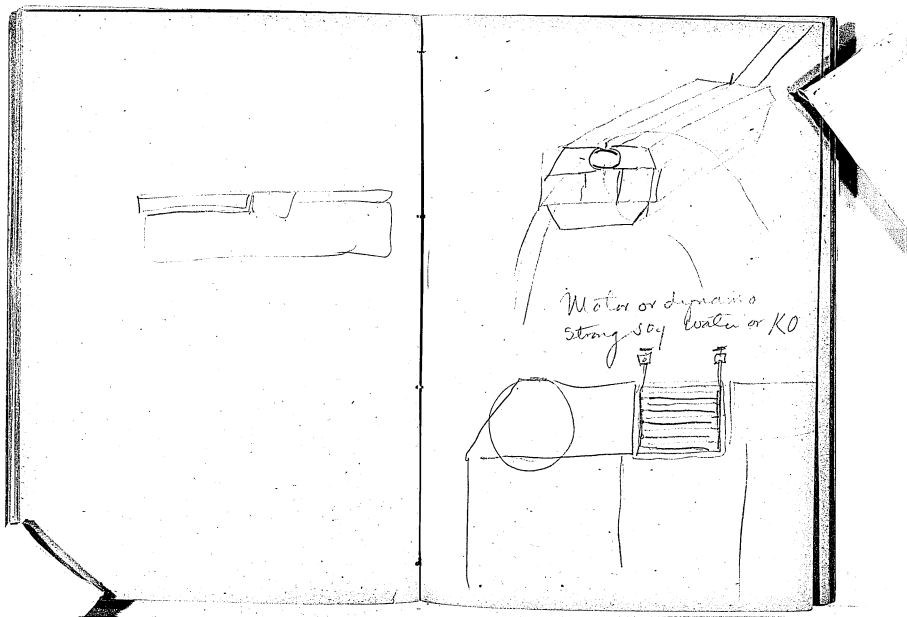
With new platinum Transmitter
Phone style, case [illegible]
~~Cord~~ Heavy magnet in cheek +
Shunt or Condenser around points
to cut out of effect of not touching
or bouncing brakes

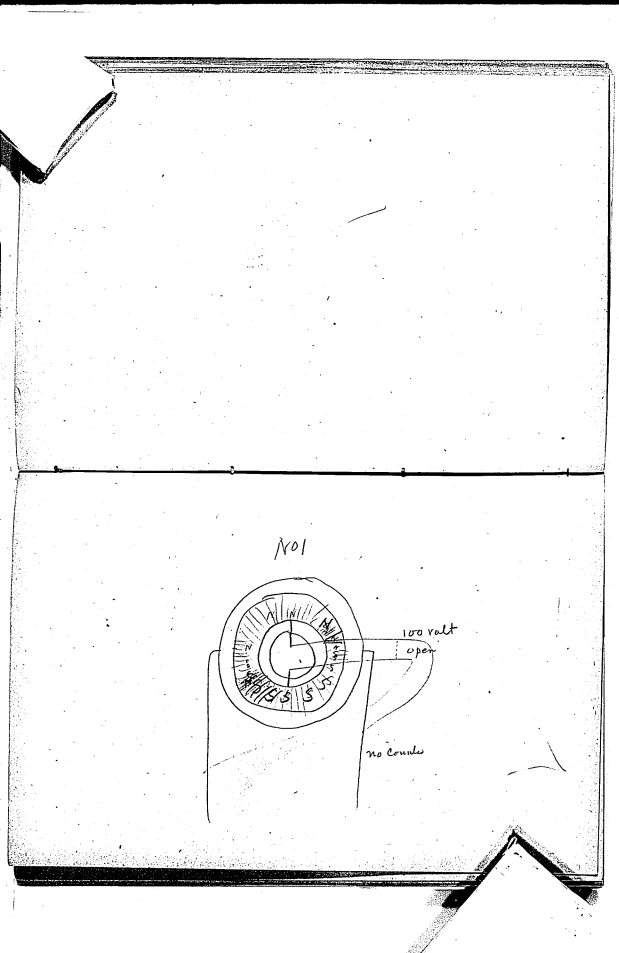


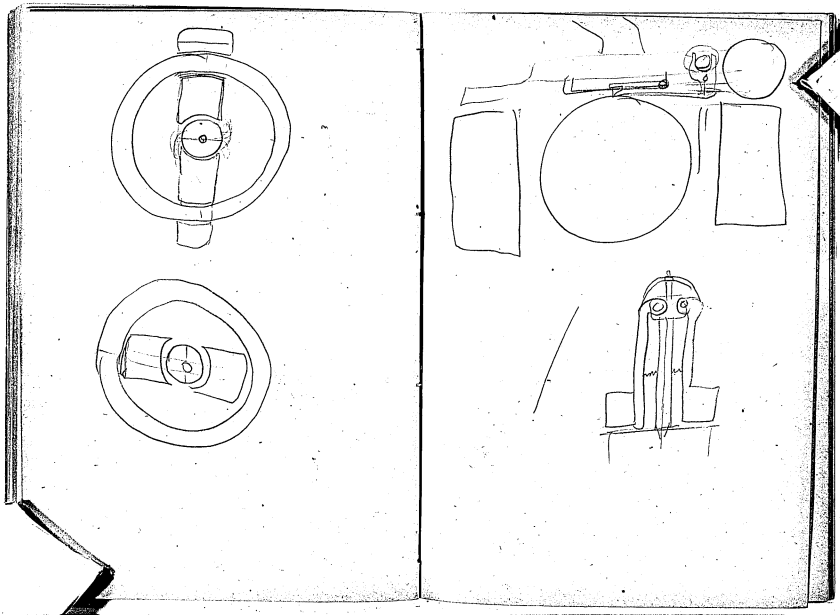
With recent practical Modern
telephone Phonograph Motor, use
greatly dampened Carbon Trans
to get pure wave as Blake
trans-brake Knock it out?

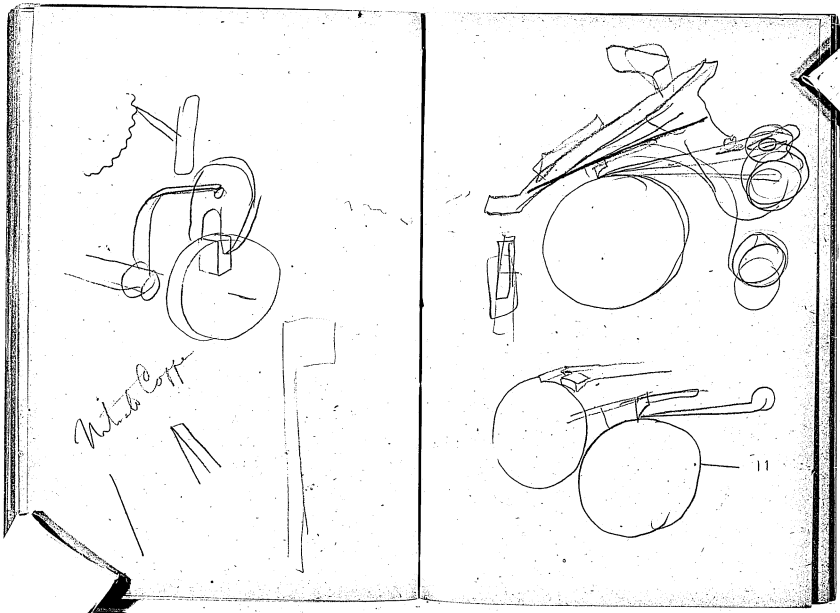


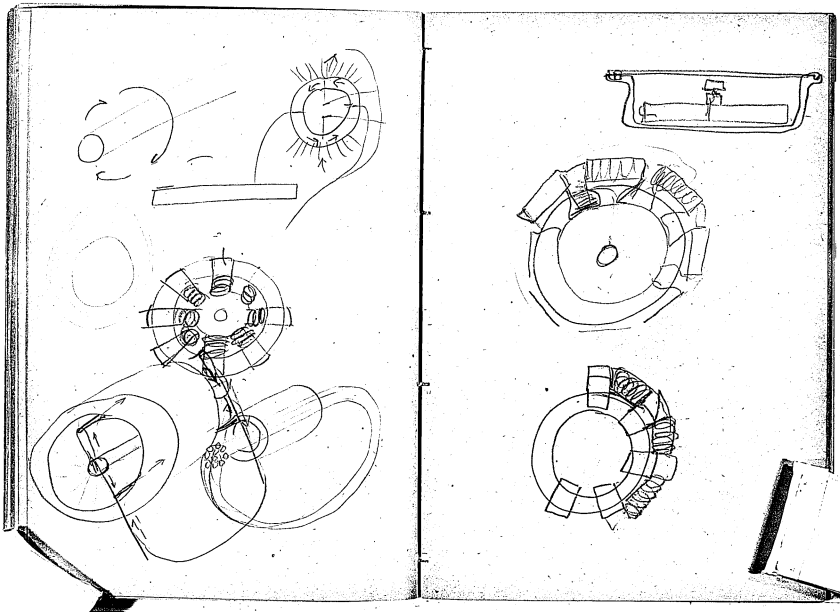


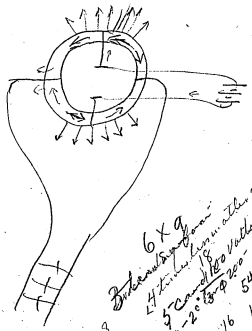

Motion or dynamics
strong soft
loud or KO


No1
100 volt
open
no counts

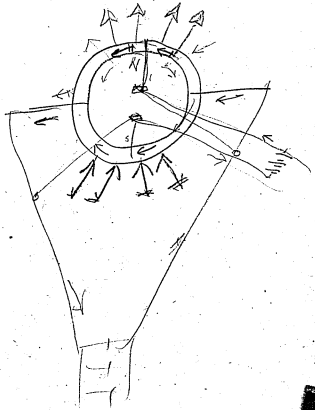


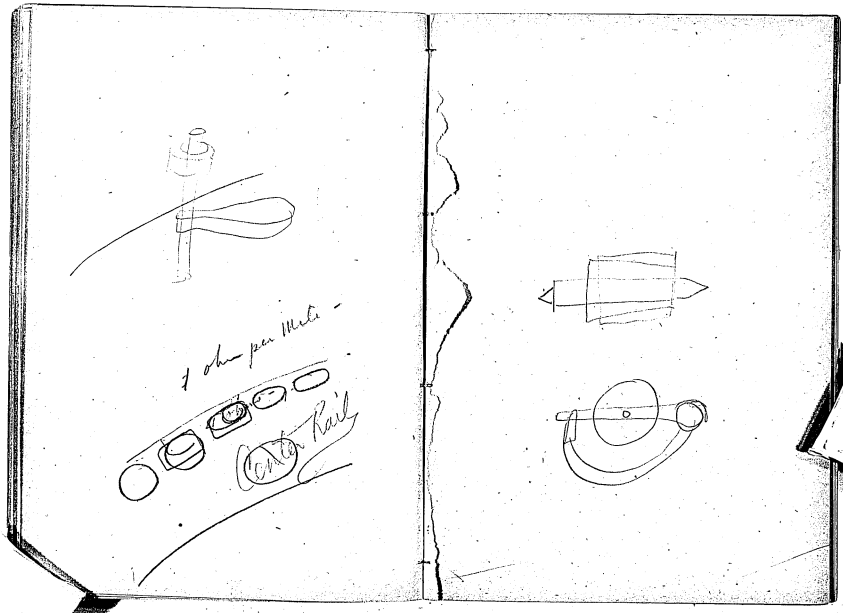

11

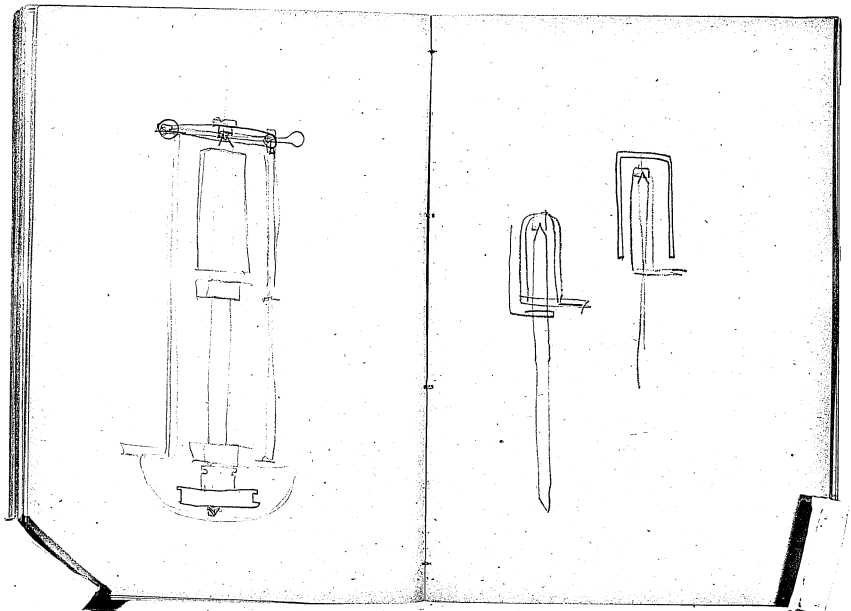


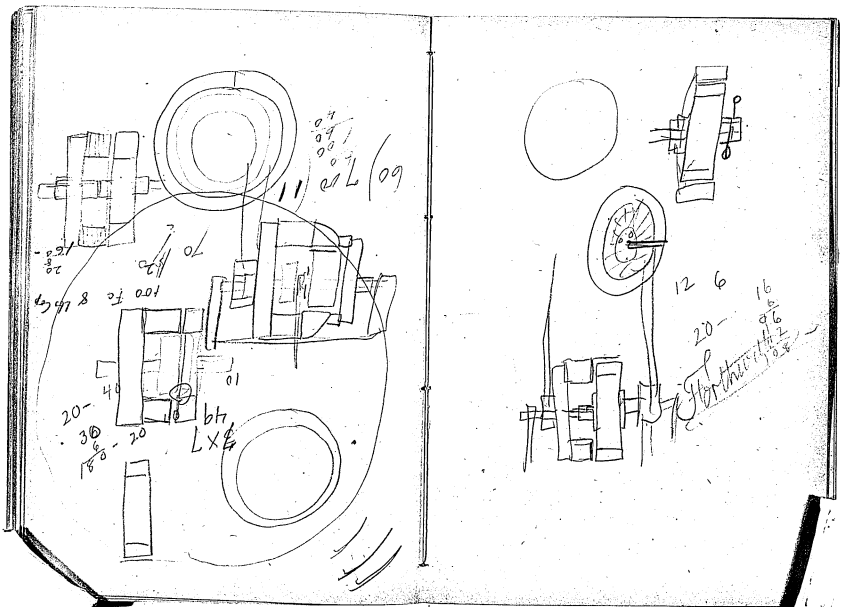


6×9
Bathroom Lighting
4 Ceiling Lights
5 Sconces
18 Vanity
-2 Tub
-2 Shower
54
16 16
8 8
12 12
8 8
9 16 10
4 Linen Lights
4 Linen Lights
13 14
1/2 1/4

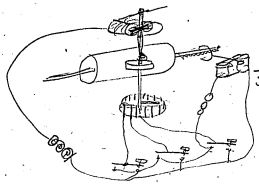




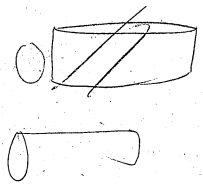




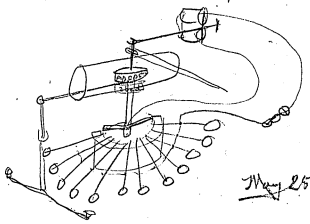
Principles of Typewriters



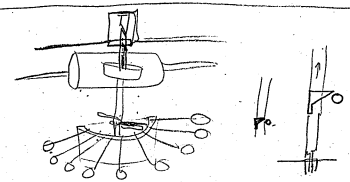

May 25–1880



2 Fundamental principle Typewriter

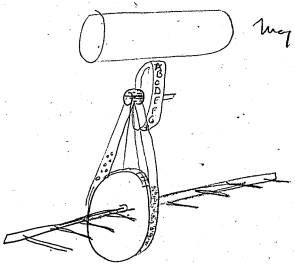


May 25 57

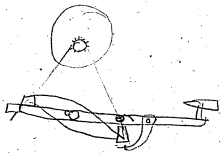


Fundamental

Type unites,



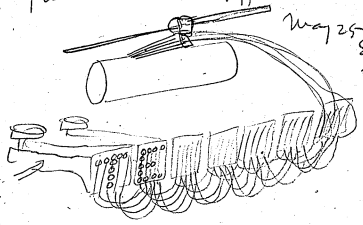
May 25-88
Tar.

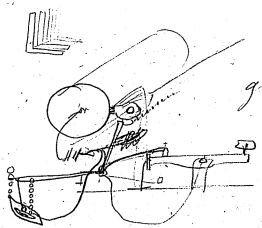


Fundamental - Typewriter.

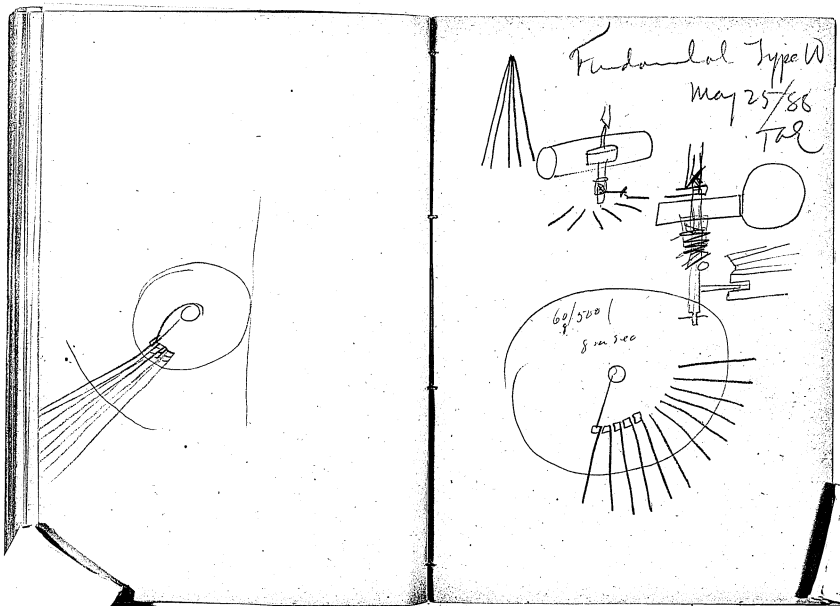
May 25 58

TLS





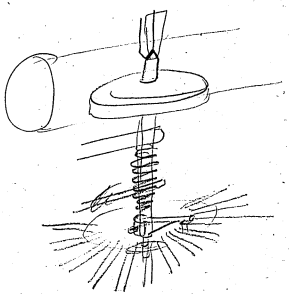
good


Fundamental Type N
May 25/86
TAQ
60/sec
8 m sec

Fundamental Typewriter

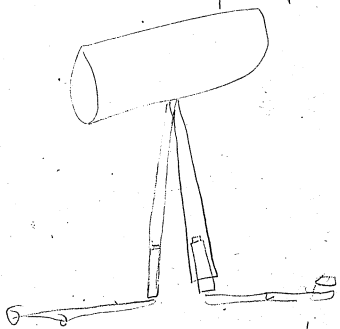
May 25 1888

Jas



May 25. 1888

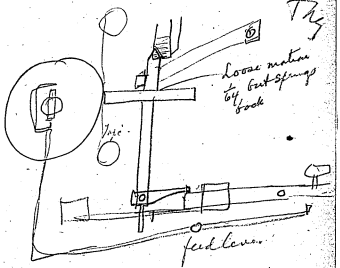
Fundamental Type Mark

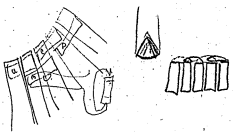


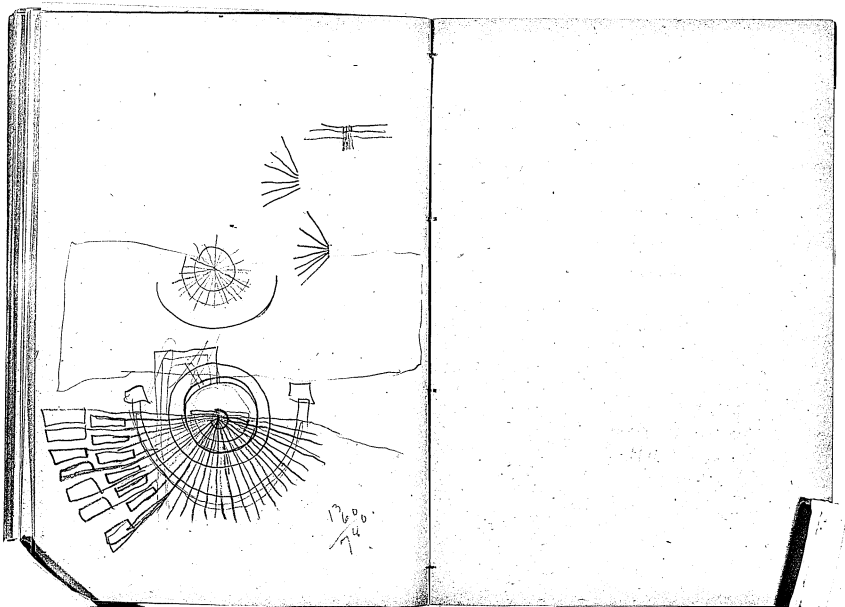
Direct types set by momentum

Fundamental Type Mark

May 25 88





Battery Experiments — May 27. cc
T&S

Chloride Copper anlin instead oxide — use Sul acid Solution + Cop plate also. Chloride ammonium Solution

Zinc (Lead lining ~~Carbon rod~~) — Sul acid + Sulphate Lead —
little HCl sol + Chloride Lead.

Reg Sol + Cu + Zn with powdered antimony also arsenic to form SbH + AsH. Expt

Same but use Monochloride Cop -

for Reg Sol Substitute Hypochlorite Solution

use Fluoride of Copper instead Oxide

or Zn Cu + Chl am use Nitride Copper instead Oxide —

Peroxide Copper instead Oxide

Oxchl Cu — Brunswick green — instead CuO —

Phosphide Copper - mitted $Cu_3P$

Chloride of Copper - " $CuO$

Try the hypochlorites also perchlorates chlorates & chlorides

Hydrate of perchloric acid a solid sub + most powerful Oxidizer Known

Fluoride Zinc dissolves
Oxide Zinc Readily

Chloride Chromium
mitted $CuO$
not affected by Caustic P.
atomized by Sulphuric acid
Hence can be used with
Carbon as dehydrogenizer
in Sul of Zinc

Ammonius Chloride
dissolves oxide Zinc

Chromate Lead
Lead plate –
Cathode Gold

Reg b at
Chlorate, or
Hypochlorite or ates
of Copper Crystals

Manganese Salts precip by
Caustic Pot, great
reducing agents.
(to Manganic hydrate)

Dilute $SO_4$ dont
dissolve manganic
Hydrate, hence
Carbon Zinc + $SO_4$
with manganic hyd

Hydrated Peroxide
making compounds
wanted

A hydrated Peroxide is precipitated when a manganous salt is precipitated by Hypobromite Potash & / Hypochlorite Potash

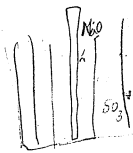
If Peroxide de Manq (hyd) is as acid as watts salts then Zinc + Carbon in Chl Sodium ought work with the peroxide in Carbon Cl forming Chl Zinc + Soda Combining with the Peroxide forms permanganate.

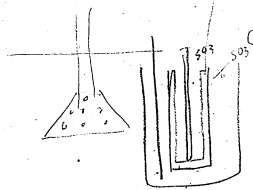
---

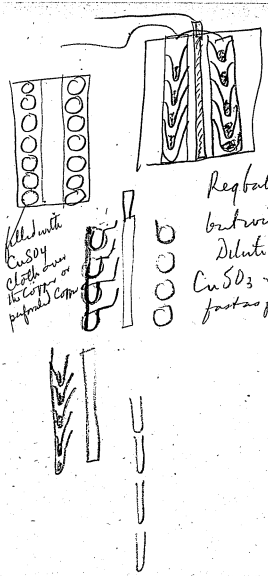
Lead Zinc permanganate Lead
" Copper
with $CuSO_4$

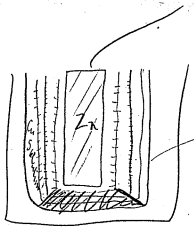
---

Try Reg Bally butt with 10 pet sulp acid form $CuSO_4$ as wanted


NaO
$SO_3$ + chromic a


$SO_3$
$SO_3$
$Cr_2O_3$


filled with $CuSO_4$ cloth over the top of perforated cap
Reg bottle but with $SO_4$
Dilute, forms $CuSO_3$ + used as fuses formed.

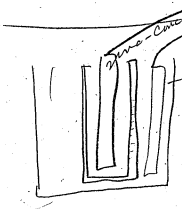


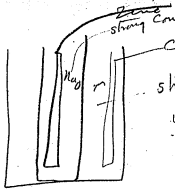

Several Cylinders of perforated Copper thin ones Cell Containing Crystals of $CuSO_4$ Through which is passed up before it gets to Zinc

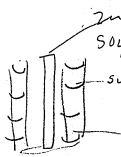
Why Can't Reg Leland be used with Sulphate Zinc, & $CuOxide$ —

Same principle Carbon & $CrO_3$ + $SO_4$ —

Try in Reg Leland, Hydrated peroxide Manganese in Copper Trough with alkali & acid —






Chl Zinc &
Oxychloride Zinc
in Troughs -

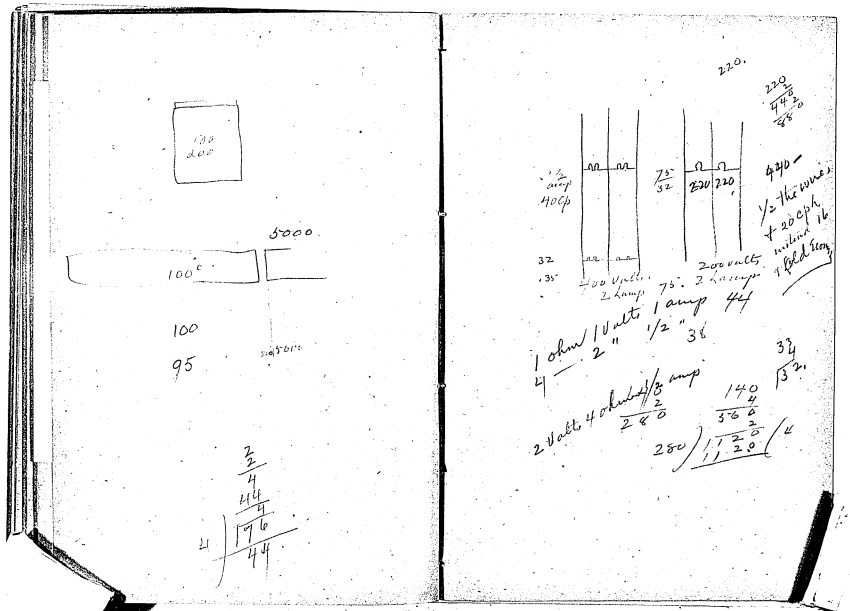
Ignited anthracite + peroxides lead
+ manganese, in Chl am, $SO_4$
Carb Soda - etc.

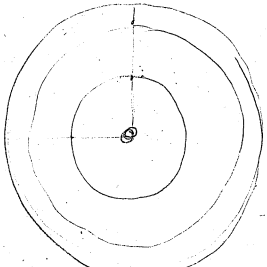
---

Try Hg Electrodes + Zinc
for storage. alkalis -

See 1st Trip Wattle Cuprous Chloride
Metallic Copper - perhaps Cop
reduced by H. dipped in Sol
of Cuprous Chl ferric Cl of
Sal Chromate Pot in HCl becomes
Covered with deposit Cuprous
Chl which on Exposure to
light becomes gradually
black with Copper reflex
its insoluble in Sul acid
hence Zn + Cu Electrodes
with Troughs filled with d
with the good Backing

Chloride Copper in Sol.
of Chl Na or perhaps
NH4Cl - the chloride being
in trough chronogen
a good battery -


130
200
5000
100
100
95
2
2
4
44
4
196
44
220.
220
440
220
440 -
½ the wire
+ 200 ph
1 Bed Room
32
35
200 Volts
2 Lamps
75.
2 Lamps
1 ohm 1 Volt 1 amp 44
4 — 2 " ½ " 3¢
2 Volts 4 ohms 2 amp
280
140
56
280
3¢
32

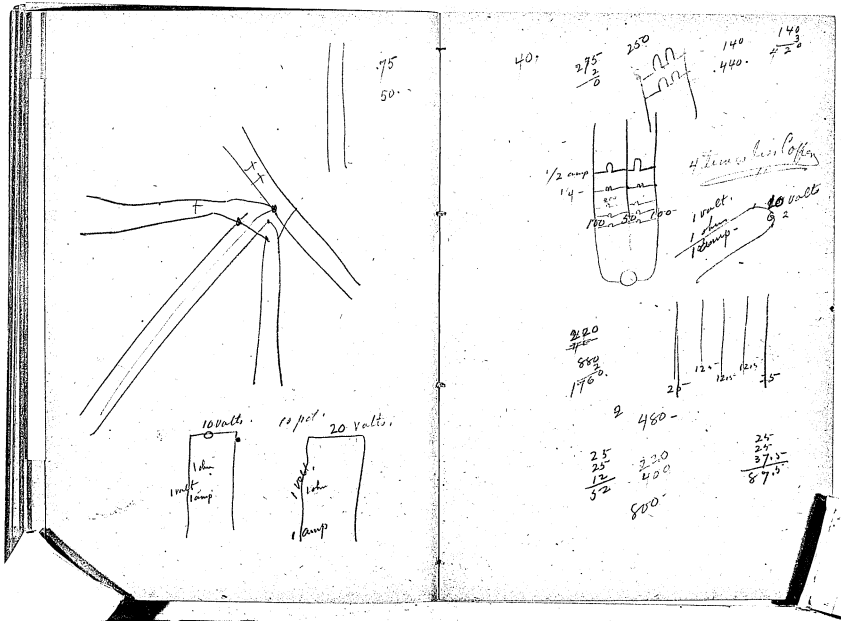


2 new lamps series
1/2 ampere, 440 ohm
200 Volts.

2 old 10" Ewd 220 Trim. 440
armature 440 - 880 Res.
400 Volts:
1/2 the wire, + 20 cp
Lamps instead of 16 —

2 / double Lamps equal economy
440
440
88 7760 — as against /
440 — or 4 times
1760 —
less 1760 or Equal Cp.
or old Economy
1000 ohms against
440 new Lamp
& same Lamps 2.2
less Copper —

440 / 1000 / 2.2
880
120


.75
50.
10 volts.
10 pot.
20 volts.
1 ohm
1 volt
1 amp
1 volt
1 ohm
1 amp
40.
275
250
140
140
440.
1/2 amp
14-
1 volt.
1 ohm
1 amp
220
880
1760.
12-
12-
12-
75-
2
480-
25
25
12
52
220
400
800.
25
25
37.5
87.5

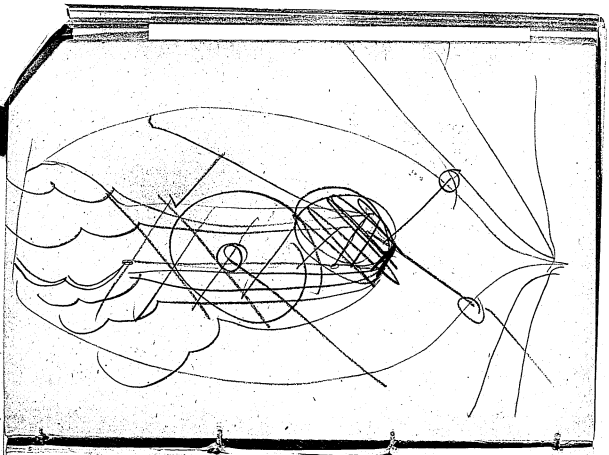
16
6
96 — O
12
42 - Carbon

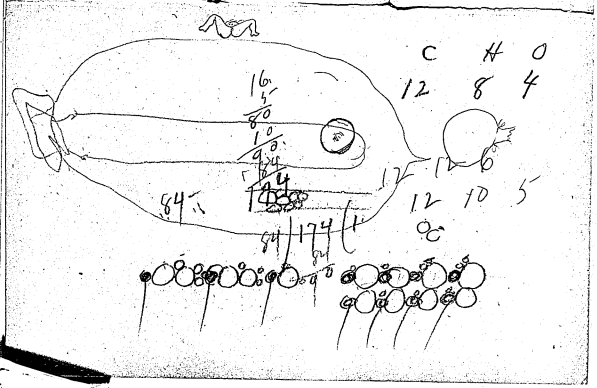
$C_6H_7N_1SO_3$

72 · 7 · 14 · 32 · 48.

2 32 108.
4
72
108 ÷ 8

72 — 72
7
14
32
48
173




C H O
12 8 4
12 10 5
64
174

**Notebook, N-88-01-03.2**

This notebook was probably begun by Edison on January 3, 1888. The first page contains the notation, "Idea Book." At the front of the book are a series of notes and drawings for a caveat covering phonographs, electric lighting, ore milling, and batteries (April 29, 1889); an electric brake caveat (June 15, 1889); and an electric railroad caveat (April 10, 1890). Near the end of the book is a 5-page list of proposed inventions, followed by notes on phonograph caveats (April 14, 1888; November 10, 1888) and electric lighting experiments (April 14, 1888). The back cover is marked "Edison Private." The spine is labeled "47." The pages are unnumbered, and the book has been used in both directions. Approximately 130 pages have been used.

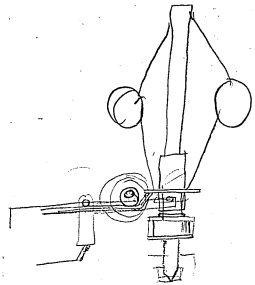
N-88-01-03.2

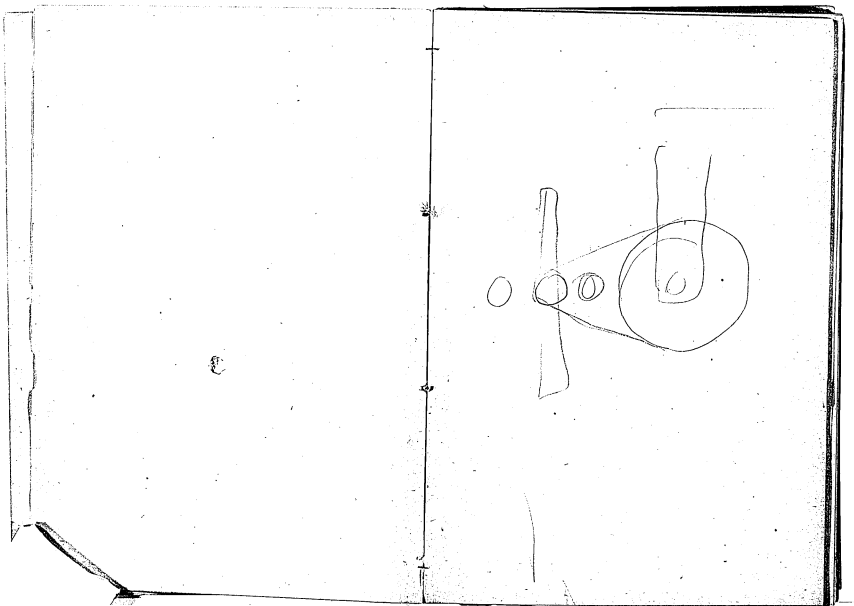
Idea Book

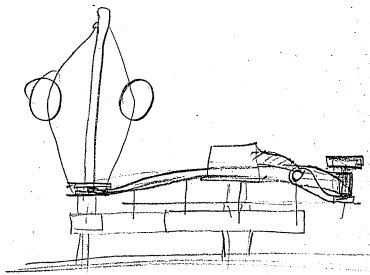
Apl 13 1886

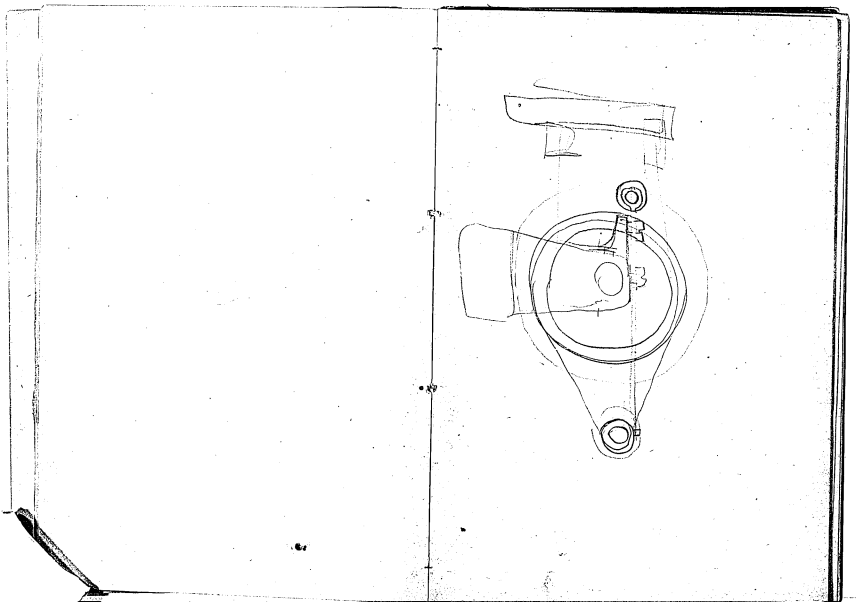
4

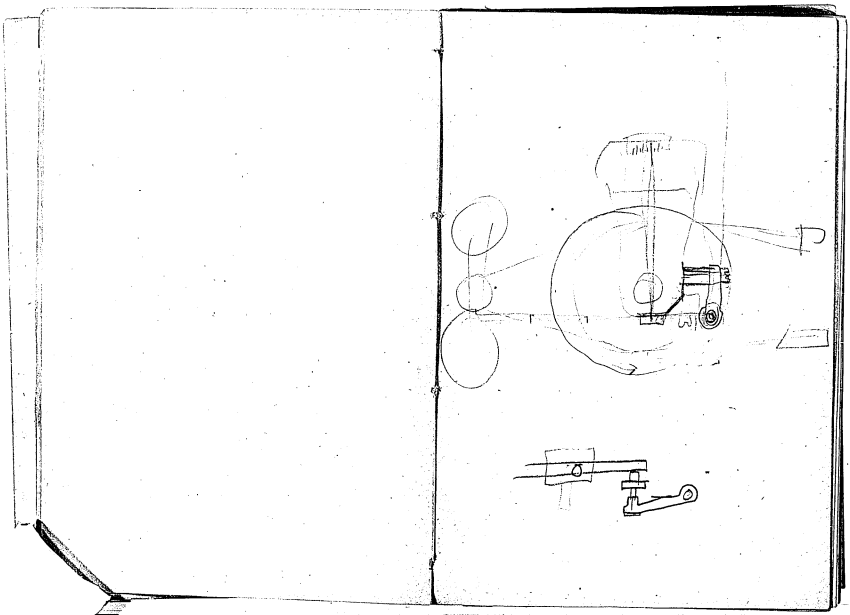
Time Work of Annette Hr. Lobeth Hrs. Min. & Time
Paper

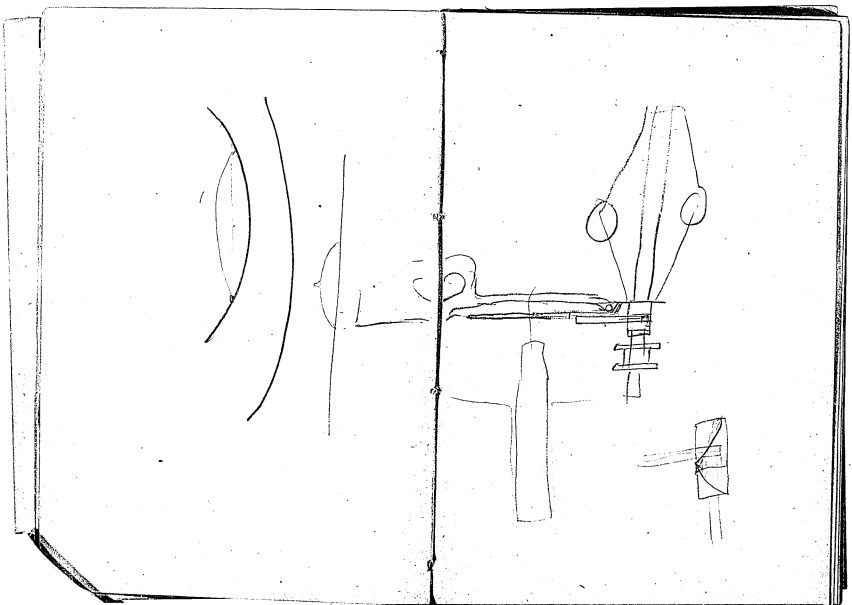


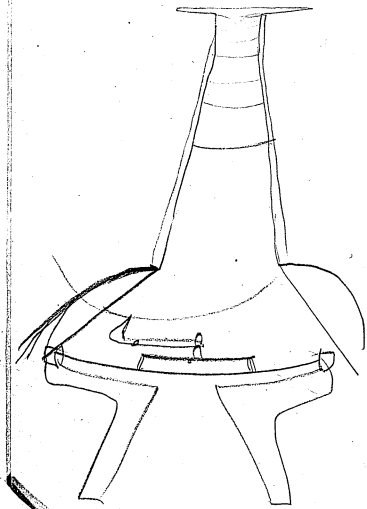












3 3 X 12
6

36-

6 X 9.

54

12
18
30

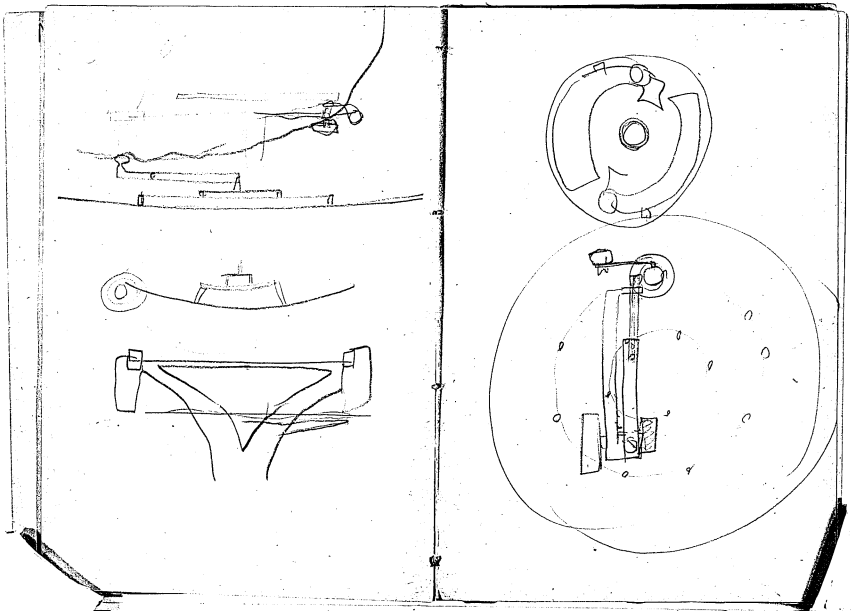
44
54-

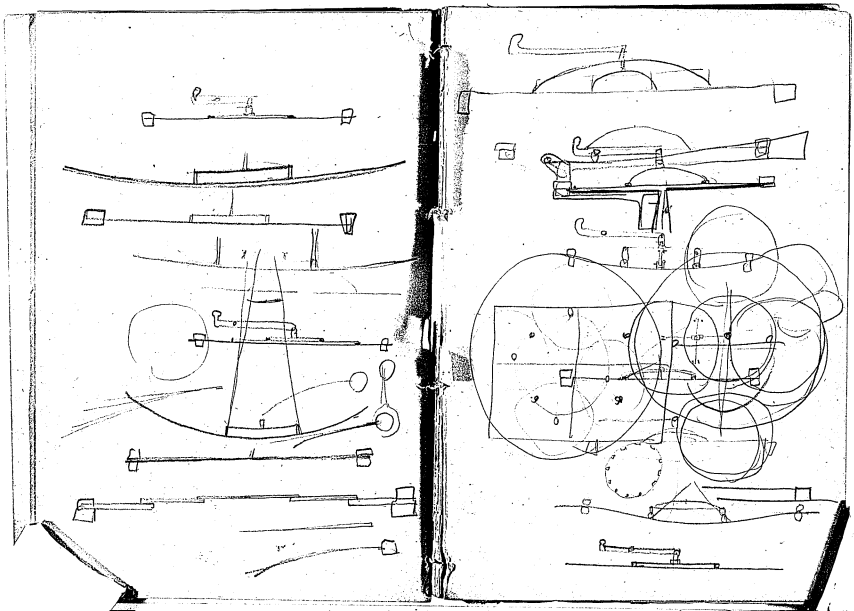
4 X 12

22
8
30

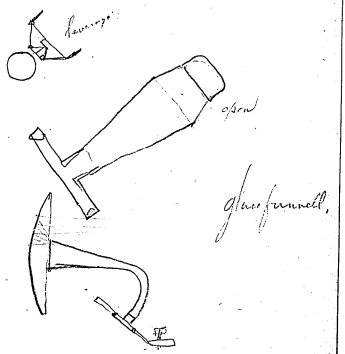
4 X 11

8
24
32



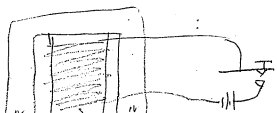


Phone Ed + Orville April 29. 89 -



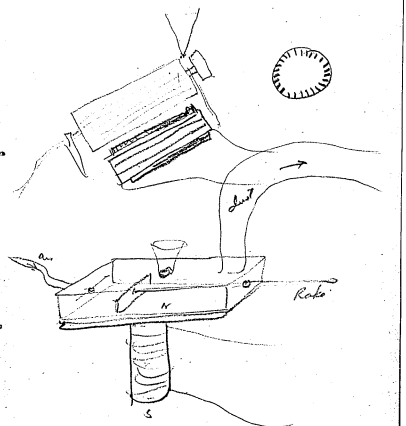
Caveat april 29. 89.

Inventing by sketch. Trace of ball cloth for inventing + reproducing

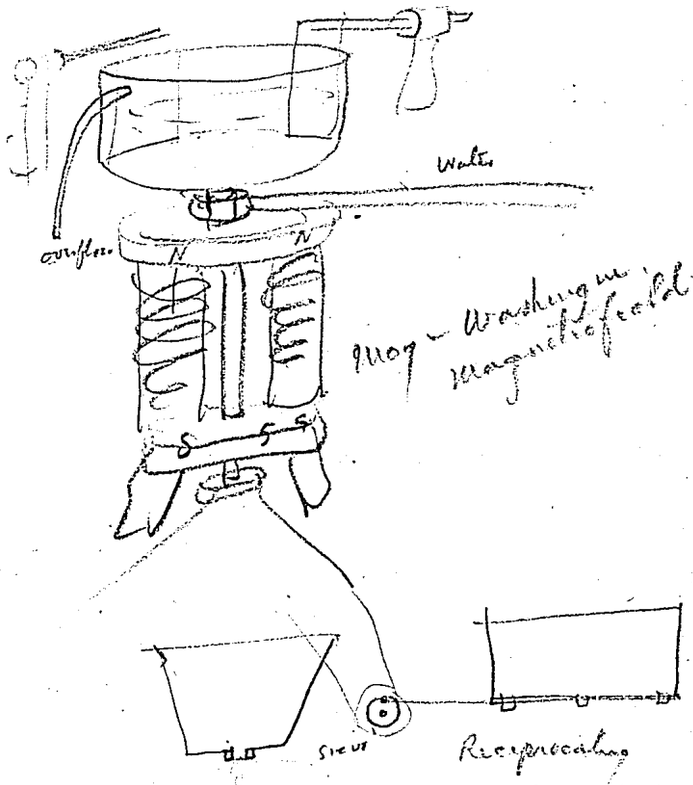


Left + drop =

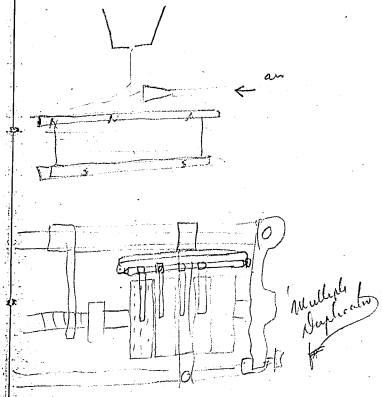
Caveat april 29, 89



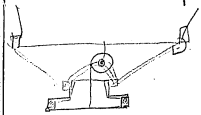
Caveat April 29 89



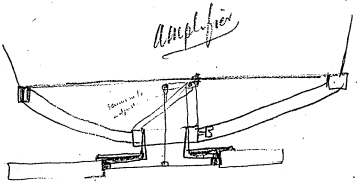
Crucent april 29 89

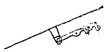


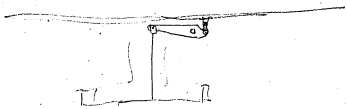
Concert Apulcy 89



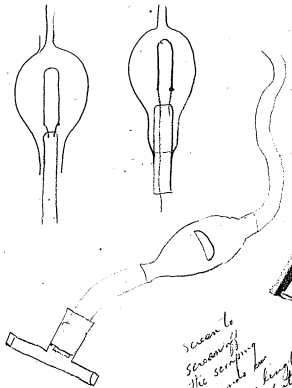
Amphion







Concert April 29. 89

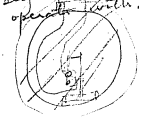


Screen to
Screen of
the scraping
Down to
Longer evening
pulls around
plant scrap
the scrap
Shaders
Men

Concept April 29 89 -

Rotating Spectacle

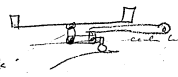
also put Recorder & Reproducer on same dia + by Lucating slightly (three ~~cases~~ + but-plano to operate with.



Instead of spectacle we could have single arm & hole & case removable Conducted Recorder & Reproducer also there could be 2 arms one with Recorder one with Reproducer & both move independently

Claim. Clamped diaphm preferably glass between clapped ~~metal~~ disks without yielding material

Caveat April 29, 89




for plant
Brush whose hairs are stiff + run to a point, Deer hair,

Closed funnel filled with a heavy Vapor like Chloroform, with or without pressure,

a Turned surface on a phonogram.

a Turned surface on a phonogram in situ -

Covent. April 29-

a Cylinder of Halogenized Balata or similar gum Coated with photographic Recording medium for making Cylinder also a flexible -

Making a phonogram of a soft material adulterated with or composed wholly of a material which by a subsequent treatment Chemically etc will harden Sing a way in which aniline oil will mix. Record on it & harden by Sulphuric Acid with formation of Sulphanilic Compound

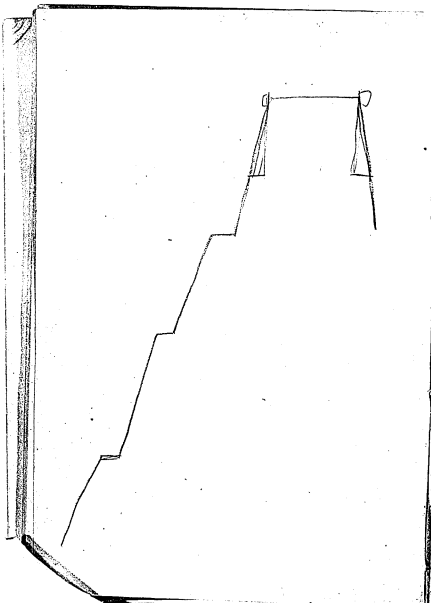
Concrete April 29 09

Mix paraffine with a Hydrocarbon or some hard wax or oleo resin which will mix with the Hydrocarbon so that it can be worked in the plastic state then after record is made of how with the surface of the Cylinder to make the layer of Hydrocarbon a Solid derivative

Asphalt mixed with such a Hydrocarbon like Bengal can be so proportioned as to be recorded upon & retain Chlorinated by Chlorine or by immersion in an ant solution containing a Chlorinating Compound will become hardened

Caveat april 29. 89.

Chlorinated Balata when used for non inflammable insulating purposes is apt to become brittle, often the solvents have evaporated to prevent this - I propose to put Linseed oil with the balata + Chlorinate, also Linseed oil + Chlorinate with Chloride Sulphur - mix Camphor with it - free balata - Rubber - also gutta percha also Syrian asphalt waxes already Chlorinated, filaments carbon made from finely divided graphite mixed with a Carbonizable binding material like asphaltine or highly dehydrogenized asphaltic substance like that produced by oxidizing asphalt by nitric acid or by Chlorine which removes the Hydrogen - a part of by using Sulphur by a solvent with the asphalt of dissolving Solvents "Naphtha" Benzine to ~ filament + Carbonize

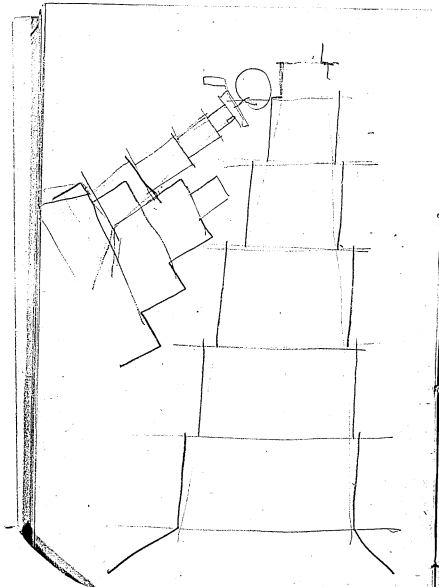


Concat april 29 –

I act on pulverized magnetic iron ore which have been calcinated as far as possible by an acid to remove the last traces of phosphorous which occurs in the form of phosphate of lime, I use warm sulphuric acid diluted – also nitric. get the acid boils by a Centrifugal drier & then words the ore with water to remove the products of the reaction –

For phonograph points I used Chemically pure iron reduced by Hydrogen form the same into shape & then form the other surface into steel by Cementation –

I propose to use Sapphire for the Shaving tool & Recording & Reproducing points, & in Conducting Experiments to obtain proper Machining & make them accurately & economically

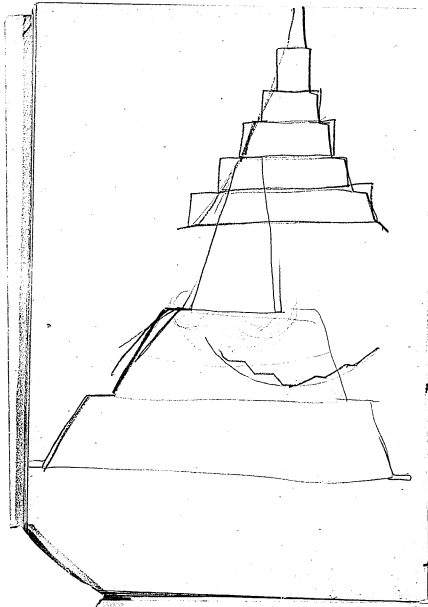


Concrete April 29, 89.

One process I am experimenting on is, moved through plaster of Paris moulds. Is to use a screw or hydraulic press and force the cylinders out like lead pipe. Cut them into proper lengths & then put them in a mandrel in a forming mould while plastic with a proper mandrel inside having a taper suspend set them to shape by a blow. Withdraw from the mould & cool on the mandrel —

another method is making of forming the figured stock in a proper mould withdrawing the mandrel & forcing the cylinder out as now. Force the material while in a plastic condition into the mould by a hydraulic press. The moulds being removeably connected to the press the press being hot so the material is plastic.

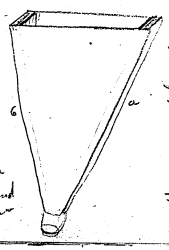
For rapid turning off the cylinders some may have a time [illegible]



Concert April 29. 89

I use several shaving Knifes following each other but all connected together regularly allowing each Knife to take such a depth of chip as not to chop the surface and for instance if I have 4 Knifes I am enabled to take off 6 times the depth of surface as one Knife. The first Knife takes a comparatively deep chip the 2nd one not too deep and the last Knife does the smoothing by this means the cylinder is passed over the Cylinder several times to have the surface as is necessary.

Funnel made of Spruce wood. the sides spirit thin so that the sides form a sound passing some portion of the sound in an upward direction to be reflected to the front




Here amplification of weak tone of sounds

Concent april 29 89



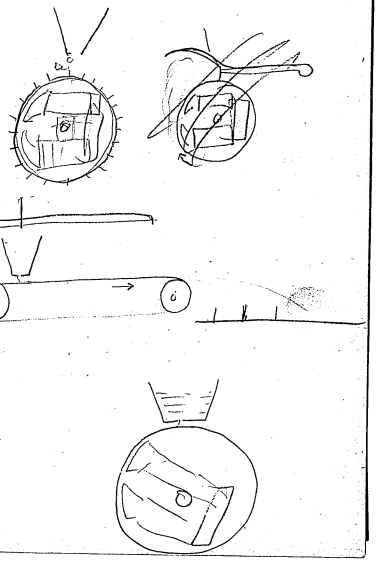

(by this means one side is sharpened to all
given below a cutter of pitch which
the other side is sharpened to all above
a certain pitch.

Clearing off [illegible] with
[illegible] grab - so that it
takes right depth chip at
[illegible] which causes
cutters that chip not enough
to clear grooves taking off
a little time more than necess
is taken off.

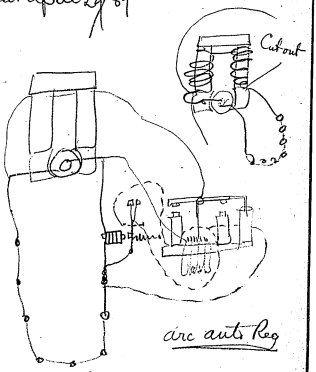
New clamp to clamp
driving arm -

New double nut 100 thread
arm on sprocket to lift it
[illegible]

Camera april 29 89 -

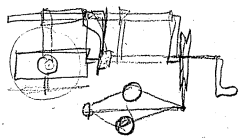


Concentapul 2/4/89



Concentrate April 29/89

To remove the non magnetic particles which cling to the magnetic by clearance planes & tumble the ore with large rocks after or before Concentration to remove the clinging particles of concentrate & run through the Concentrator again.



Hand tumbling plans for toy fegures

Caveat April 29/89

The plastic material which I propose for the base of the veneered cylinder may be pressed out in sheets while plastic rolled taper cut in strips & formed into a cylinder around a mandrel by building or lapping or a round disk somewhat thicker may while plastic be forced over a mandrel to shape: or it may be spun over a mandrel. or the sheets may be forced out when in a plastic state by a press to under-wrapped around a mandrel & then turned or narrow strips can be forced from the press & be wound while plastic around a mandrel just as if it were paper & a cylinder formed & while still soft have the

Correct April 29 89

outer surface of the cylinder parallel to same drawn outside over wholing of the cylinder by a hot iron or heat travelling along while material is ~~heated~~ softened

If aground tube be used pipe, the thickness of the cylinder walls as well as diameter will be the same but as a taper mandrel is required to fit the taper of the phonogram holder of the phonograph a straight outside the sealing of pulverine material as they come from the press must be thicker than they are to be used when the phonogram is complete, hence by cutting the tube in sections shorter than the finished phonogram rolling on taper mandrel

April 29/84

Mr. Edison the Paper is made but the one under is now not same diameter. This is made right diameter of its whole length & the photogram lengthened by ~~[illegible]~~ spanning by a total column the ~~[illegible]~~ is colored

I make a battery by using say Zinc containing a small per cent of ~~[illegible]~~ Mercury. This I immerse in an Acid or alkaline Solution such as Sulphuric acid or Sodic hydrate. The depolarizing Electrode I form of Red Oxide of Lead mixed with water or some salvable Salt of Lead like the Acetate or Nitrate

April 29 89 — Concat

just sufficient to moisten it then
moved it by hydraulic pressure into
flat plates. These are sufficiently
Coherent to be handled. They
are then put into a peroxidizing
Solution say a suitable Hypochlorite
or Chlorate of Pot ash + Hydrochloric
acid - or dry hypochlorous gas is
passed over them + in fact many
methods of treating. The lower
oxide to a higher one can be
used - The Warm Hypochlorite
~~of Soda~~ is perhaps the
most convenient. The plate after
peroxidation is suspended in
the Lyquid in a lead frame
which makes contact with
the plate around all except
its top Edge - If the lyquid
is say a 30 per cent Solution
of Sulfuric Hydrate, the results
are very good while the

Apl 29 89 Caveat

battery is at work but lead
gradually goes into Solution when
the circuit is open & is deposited
on the Zinc - My improvement consists
in immersing the plates before
use in water or an alkaline Solution
or even weak ~~acid~~ acetic acid
for several weeks so that
all of the unchanged red lead
is dissolved out and then when
the plates are put in the Regulating
battery by means of an External
conductor ~~short~~ Keep the
battery always working (1e)
doing just enough work
internally which not being
used for useful purposes to
Counteract the dissolving
rate + thus prevent fouling
the Zinc - I am now engaged

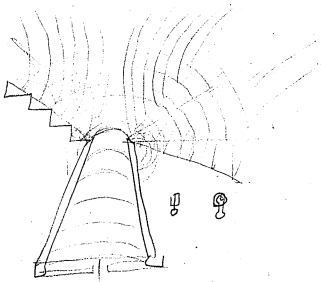
April 29/89

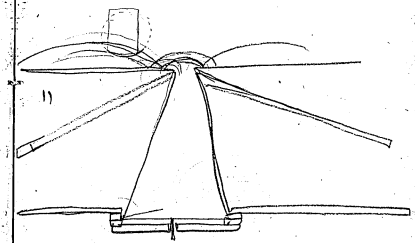
- expensive to produce plates
Chemically which are equal in
all respects to the peroxide of Lead
plates produced Electrolytically
as in a storage battery - The peroxide
produced Electrolytically act
very different from that produced
Chemically and this is due probably
to the intimacy of contact between
the particles of peroxide and
probably also to the possibility
that the chemically prepared
peroxide is a hydrate, to -
produce an anhydrous peroxide
of lead I use a plate of red
lead made by hydraulic
pressure + peroxidize it while
in a powerful dehydrating
Solution like that Concentrated
Sulphuric acid = Saturated
Solution of Chloride Zinc

Cancer April 29/59

Slides Hydrofluoric acid, phosphoric acid

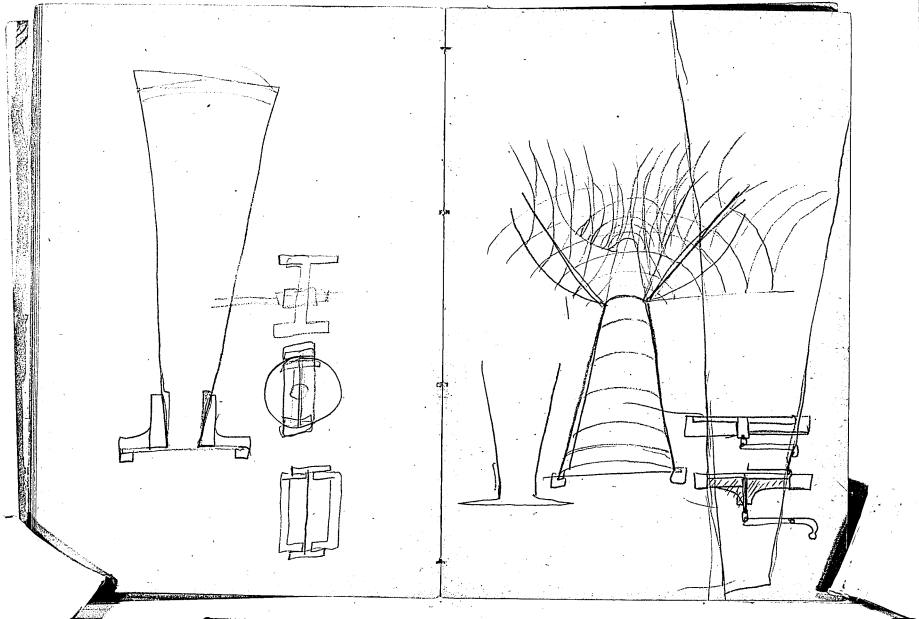
Other dehydrating agents.

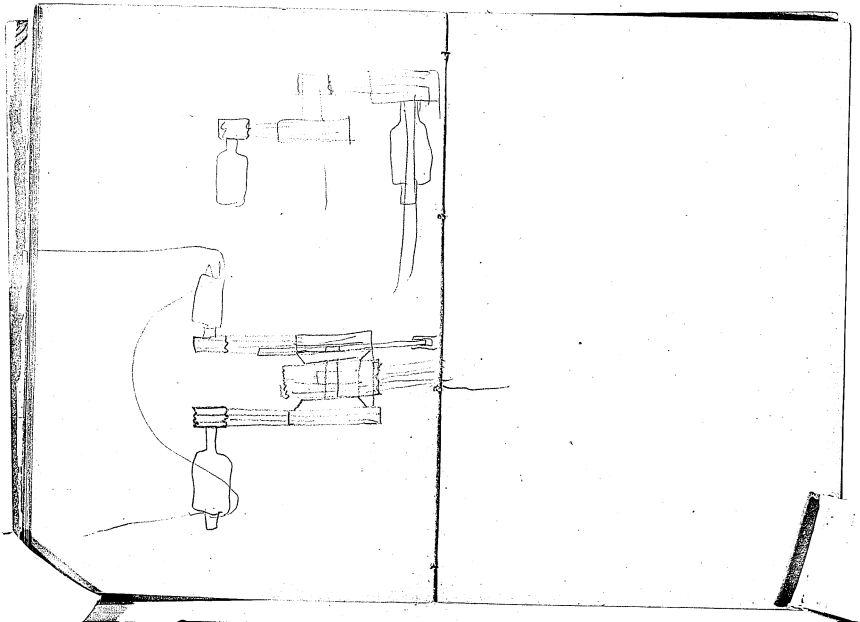




Electric Brake -
Caveat June 15-89

7





70 cells -

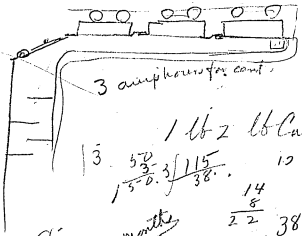
21 | 900 { 429
840
60
21
180

43 days

35
20
700

7

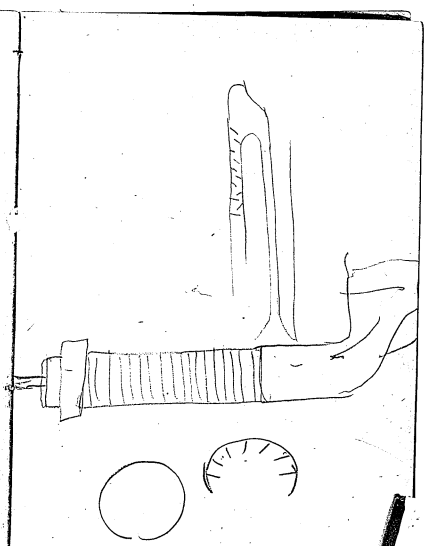
30 60 21. 50 Cells
50
300

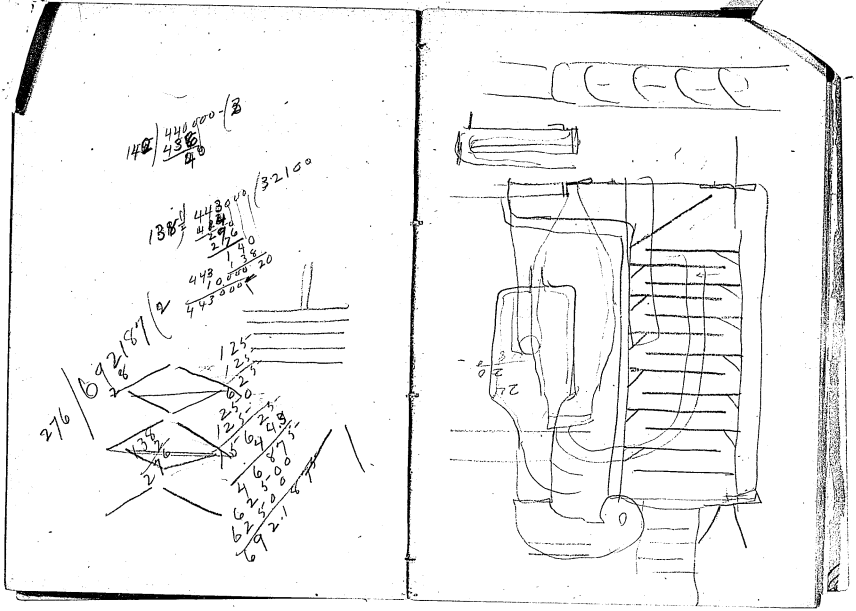



1 lb 2 lb Ca

3. 5.0 3 | 115 10
15.0. 3 | 38.
14
8
22 38

86 3 months 32.
$50





10

3300 ft lbs

400 | 44,000 | 4,000,000

2 X 13 — Surface 30 : 4 | 1,000,000 | 31

8 | 13 | 142 | 4 | 2

13

26

3

50 pot more | 0 | 8.23

2

14 13

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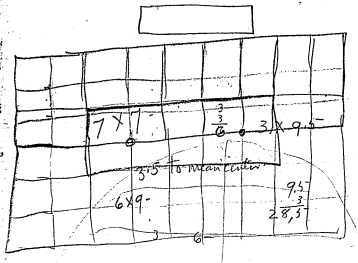
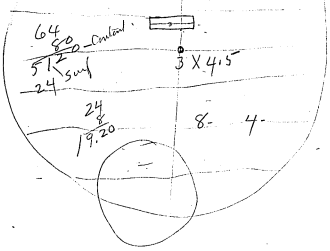
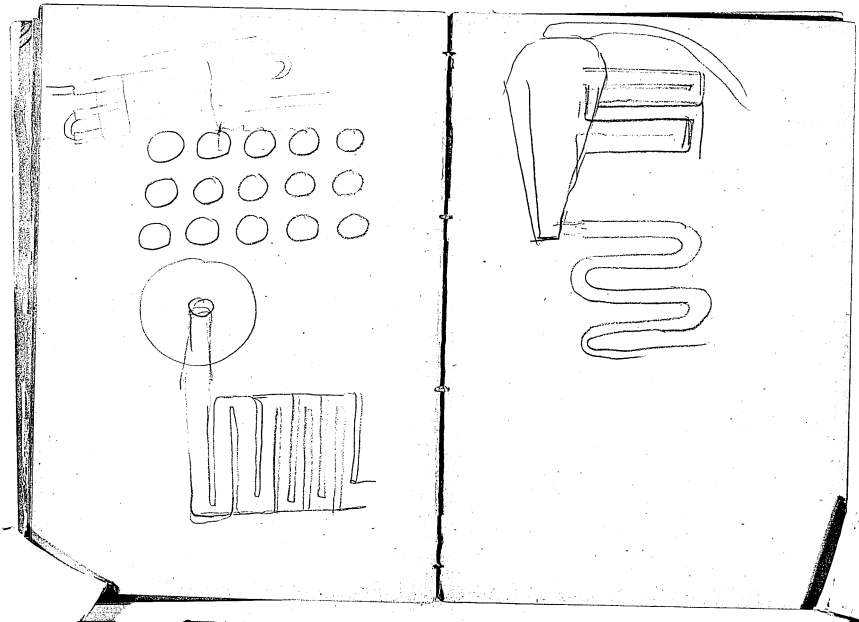
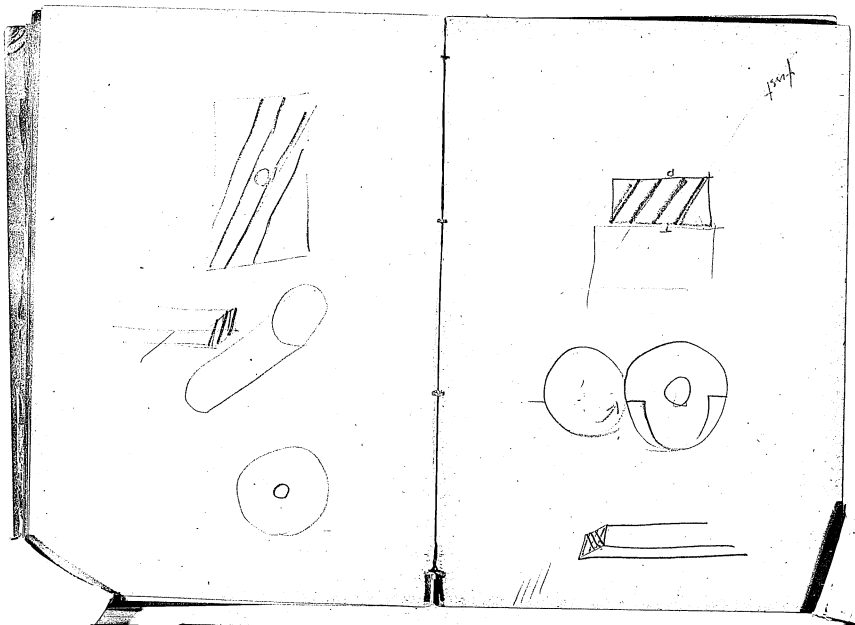
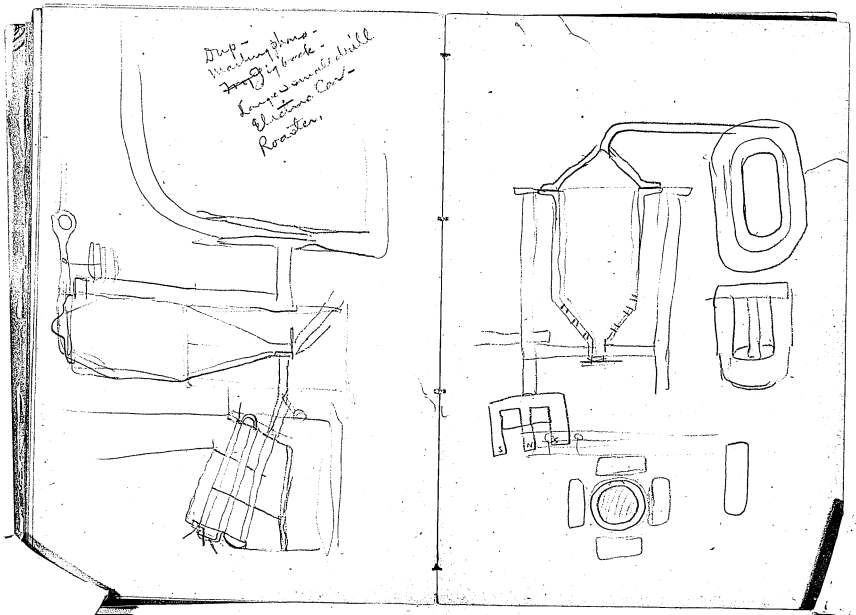
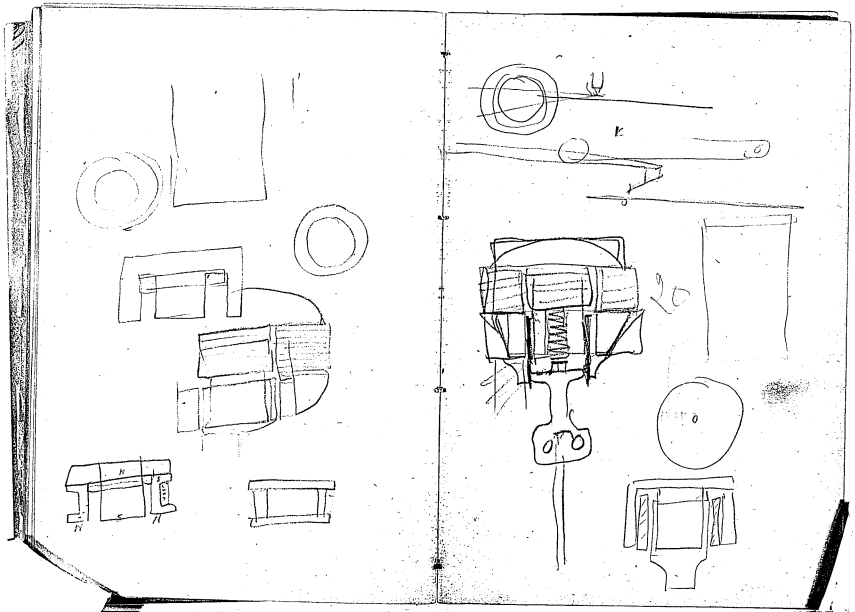







Drop-
Washing plans-
Toy Cupboard-
Kitchen Cart-
Roaster,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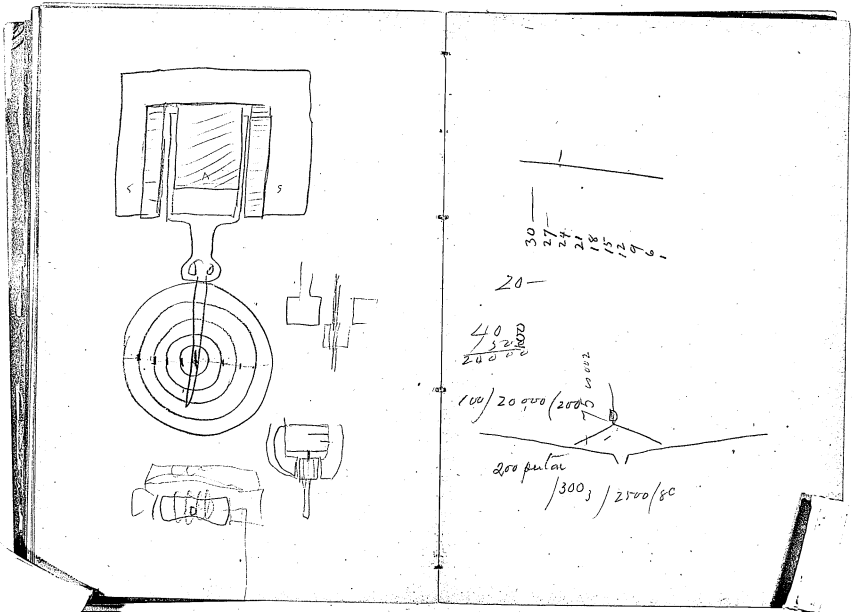
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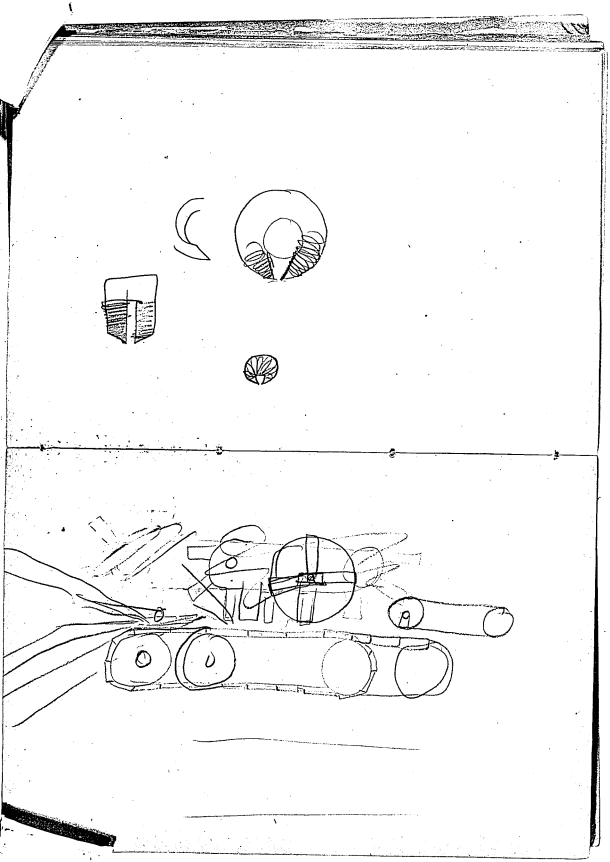
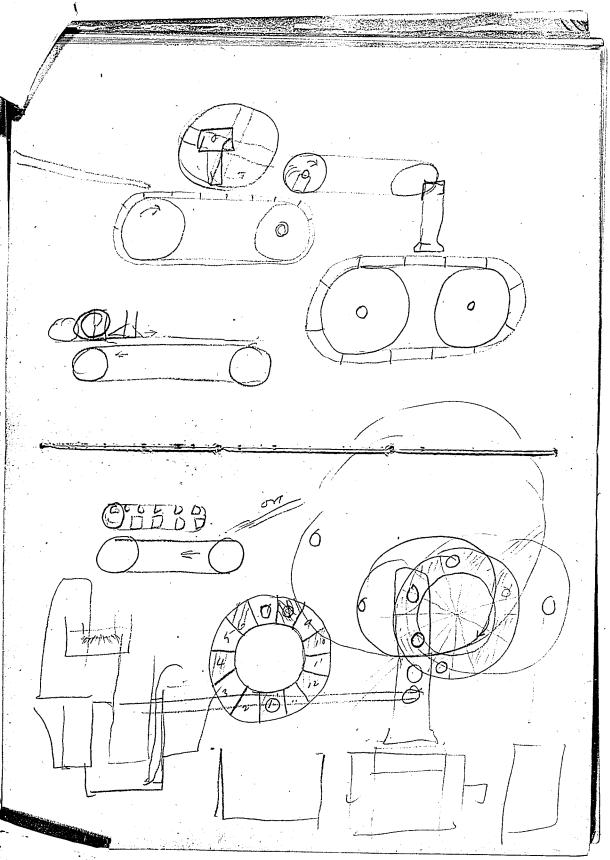
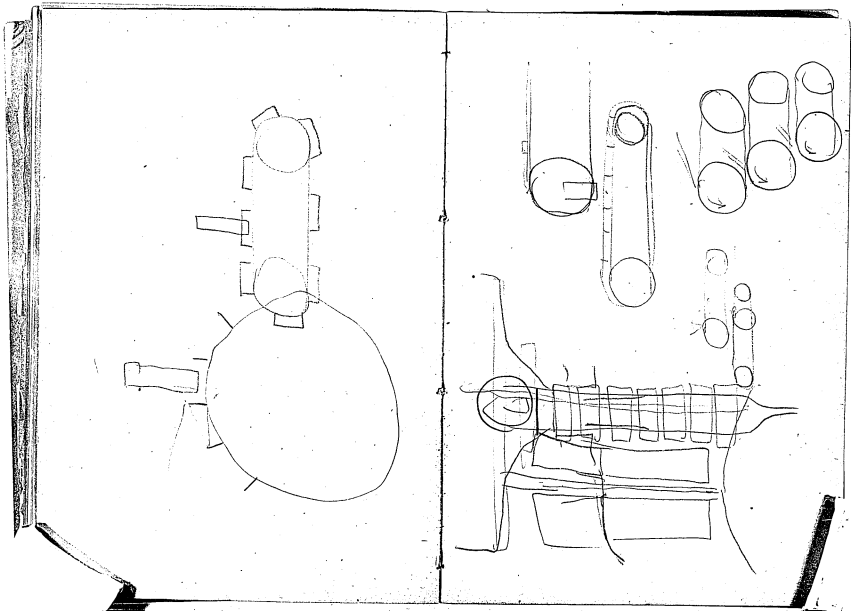
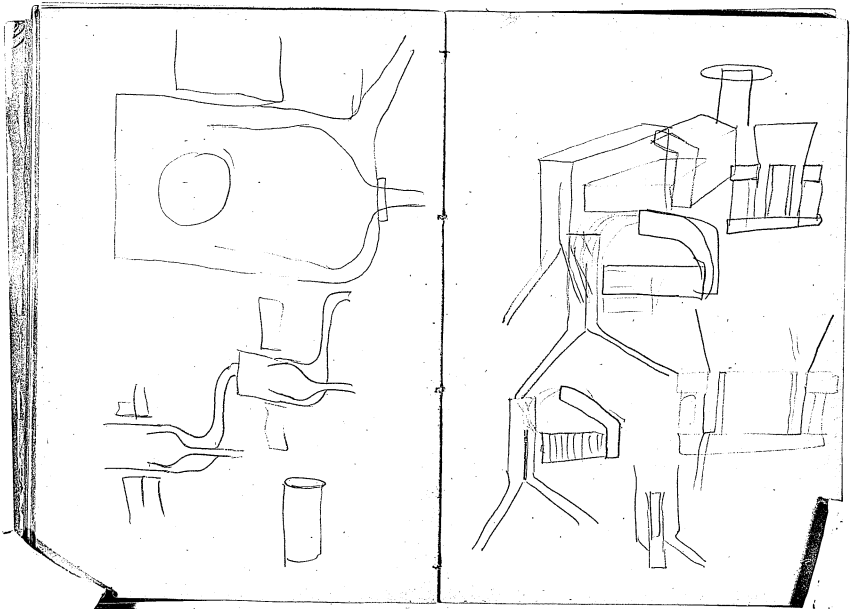
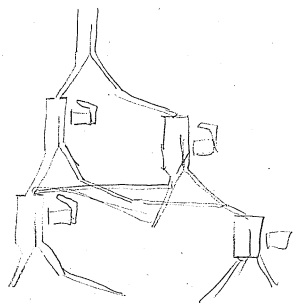
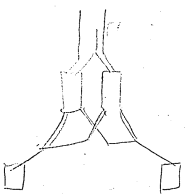


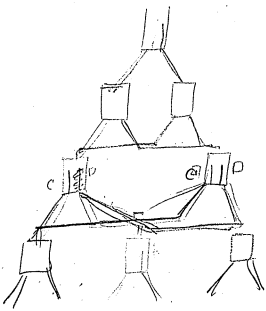


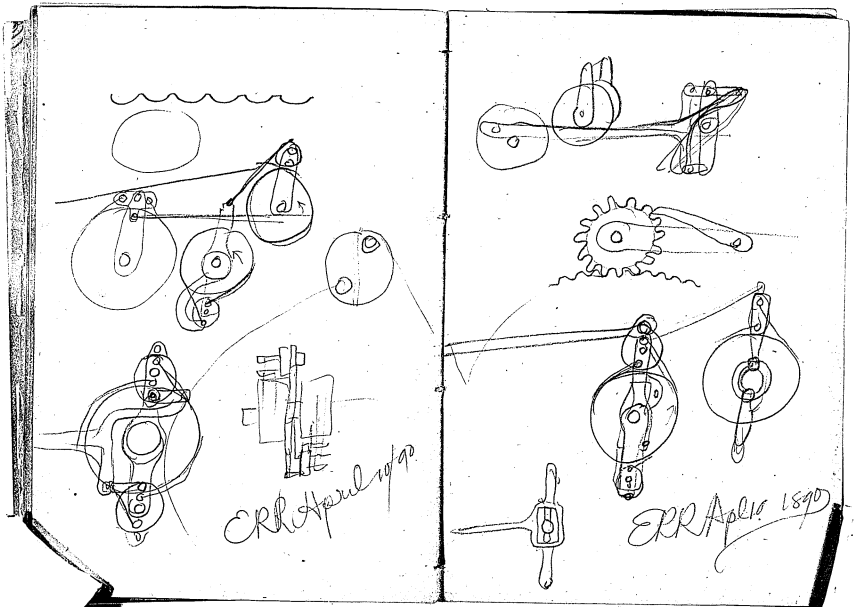


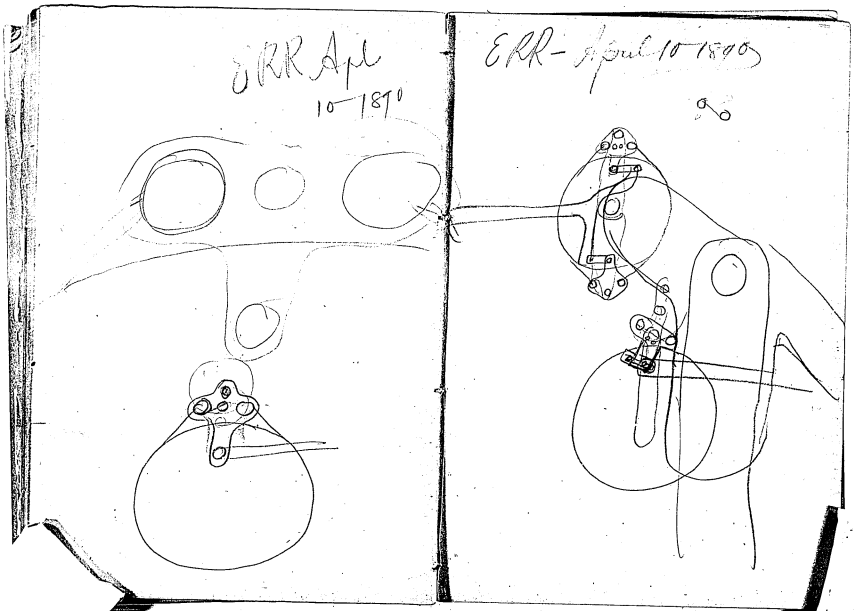









ERR April 14/90
ERR April 1890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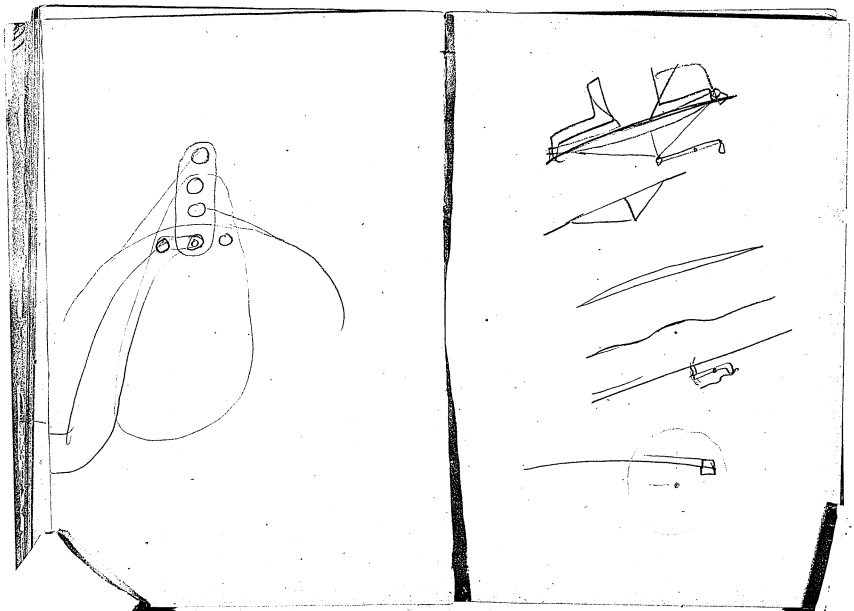
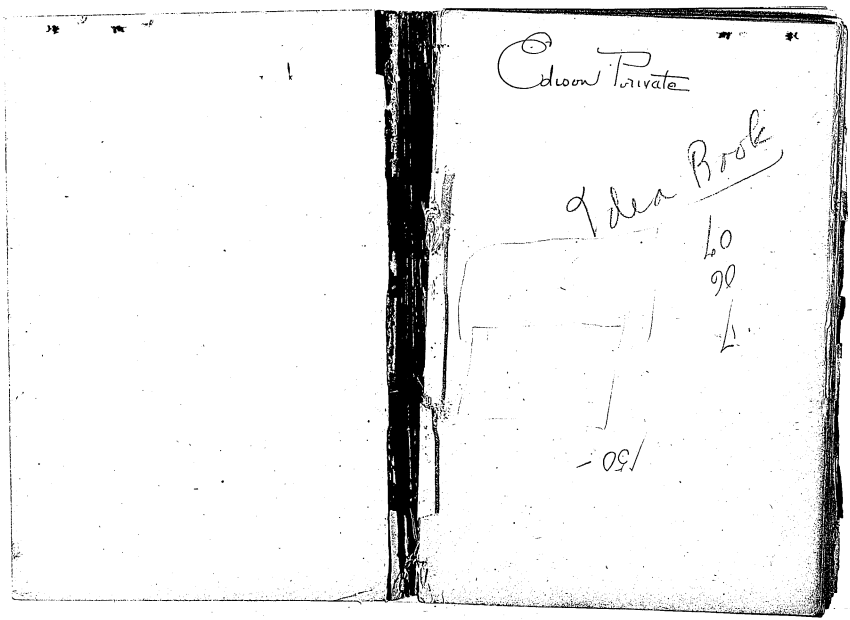


[THIS BOOK WAS USED IN BOTH DIRECTIONS. THE FOLLOWING PAGES WERE FILMED FROM THE BACK END FORWARD.]



TAE Jany 3 1888

Things doing and to be done.

Cotton Picker
New Standard Phonograph
Hand turning phonograph.
New Slow Speed Cheap Dynamo.
New Expansion Pyromagnetic Dynamo.
Deaf Apparatus
Electrical Piano
Long distance standard Telephone transmitter which employs devices of recording phonogr
Telephone Coil of Fe 64 ft in Paraffine or other insulator
Platina Point Trans using new phono Recorder devices
Grid Battery for Telephones
" " " " Long distance
" " " " Phonoplex
" " " " Sun Telegraph
" " " " Voltmeter,
Improved Magnetic Bridge for practical work
Motograph Mirror
" Relay
" Telephone practical.
Artificial Cask.
Phono motor to work on 100 volt ckts
Duplicating Phono Cylinders
Deposit in Vacuo on Lace gold Foil on also on Cotton Molten Chemical composition of buttons surfaces to imitate stick - also by plating agents
Vacuous Ore milling Longo Machine
Magnetic Separator Longo "
Locking Material for Iron sand.

Artificial Silk
Artificial filaments
New 17/-
Uninflammable Insulating Material
Good wax for phonograms
Phonographic Clock
Long phonograph for Novels etc
Pig Iron Experts with Electricity & Magnetism
Malleable Cast iron in Vacuo
Drawing fine wire.
Toy phonograph for Dolls
Cable Motograph
Very loud Motograph Telephone, with
1/3 sq phonograph.
Magneto Telephone, actual contact and magnet
Compression of carbon by rubber pieces as in microphone
Diaphragm Compressor
Glass plate water Ore Separator
Veined faced mat for Stove Castings
Refining Copper Electrically
Quad Neutral relay
Cheap low inductive insulating material
for land Cable people —
Constant mixed for iron foundry

200 Volt 20 c.p. lamp
Cheap pressure Indicator
Recording Volt Indicator
Box balancing System
Alternating Machine & Transformer
Silver Surface Switches
Vulcanizing the Pc African Rubber adulterant
Platinum wire Lee cutting Machine
Silver wire round cutting system
Delivering or Capping Coiling Cloth in Vacuo for durability
Motor altered down with new devices for C speed
Expansion Mirror Plat. foil. wire in Vacuo
Photography through Opaque Screens
Photography by examining heart other Critical points
Boron foil
Hydrant off Lamp
Phenaplex Repeater
Separating glass sheets tube etc Nickel Metallic
Artificial Heather Pearl
Red lead pencils equal to Graphite
Indian Ink
Tracing Cloth
Ink for Blind

Fluffy Incandescent Burner for gas
Regenerative Kerosene burner
Centralized Arc in Arc Lamp
Caimen Scale Arc Lamp test
Storage battery, alternating Cl? by steam Dynamo
ERR Continuous reducer
Electroplating Machine for Schmeterly
Condenser Transformer
Sq ft diffraction gratings on silver by screw machine tool
special perennial paste for ornamental purposes —
Photo Sensitations,
Cheap plain produce Mimeograph surfaces
Mineo battery & Lamp
Storing Coal from State Machine
Butter direct from Milk
Burning asphalt Candles by high chimney
Magnet RR signals.
Soften ink of books transfer to Cp photo plate
to obtain matrix
Telephone Repeater
Dubbeltabl for Hand Rubber
Artificial Ivory
Soften Vegetable Ivory to press in sheets
Various Letters in Dolando Type
Revolving Thermo

Cardew Indicator for Jamp telegraph

Marine telegraphy

Long distance speaking tube filled $H_2O$ 2 diaphragms.

Lead plate battery for modifying alternating Currents

Two revolving brushes in battery lead forced pass in Liquid close together & out into separate chambers to synchronize and reduce by gas the other —

Siren phonograph —

Permanent Wax & Electrotyping of discs hard steel high polish separately magnetized & forced together perpendicularly 005" Thick —

Telephone working model on Parly

Ear tube formed from crescent shaped wire

Long strip 50 cp carbon under stress & under for Cheap Voltmeter

Chalk Battery

Dynamo or motor long tube in long magnetic field top & bottom contacts forcing water through generates current by the passage

Naphthalene in Bowl in oil cups for lubricant

Diamagnetic motor. Capillarity tubes liquid rising repelled by powerful magnet, tube cross section to pump —

Thermo battery Stick Copper oxidized then platinized over surface rapidly in acetal — is heated good contact from upper —

Dr. S. R. phonograph

April 14 1888

Points for phenograph Caveat TAE

Split cylinders held together by rubber bands
Wax varnish in Volatile Solvent,
False cylinder with straight needle
Letter Surfaces to Coat wax on -

Wax paper butt,
Revolving Rec'r Recess
Ex drop Trans
Gramme Motor
Arrange Electric Light Circuit.
Hand Turning movement
Clock work of intermittent motion

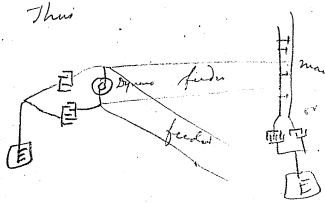
Turning cylinder off by hand with single Knifed Edge Heat Knife used in lifting Mica
Separate turning off knife not lifted by arm so it can be in abeyance of the Recorder
Limiting stud to let wax so not dig Through in
Double Cylinder Move
Flat plate move
Sliding trip for Clock work
New Recess with Sliding Shed Cover

See Chronograph & Telescope Clock work also wheel Drum for phono -

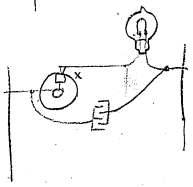
April 14 1888

Condenser for Direct transformer to protect from lightning — also ground protector on overhead line from lightning on ordinary Edison Systems

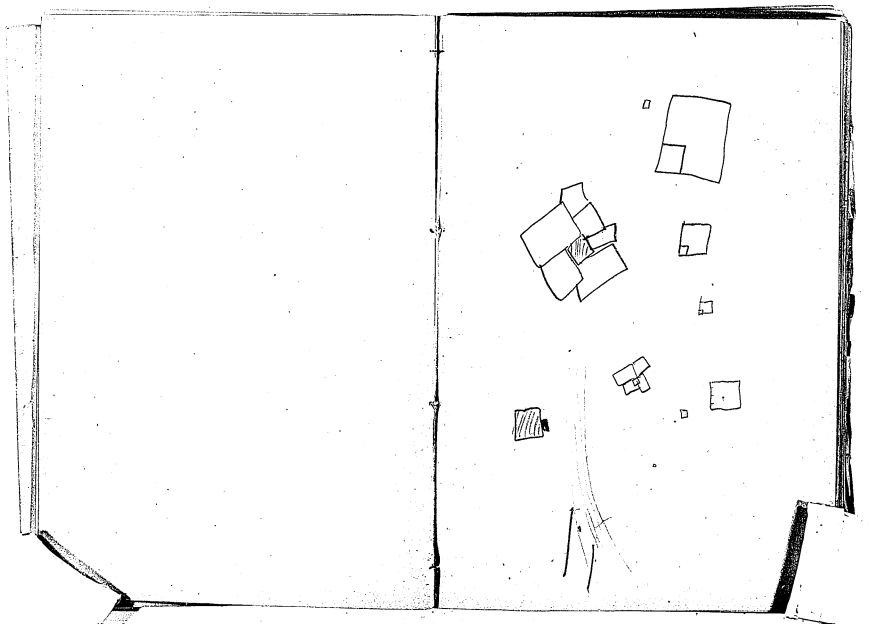
Thus

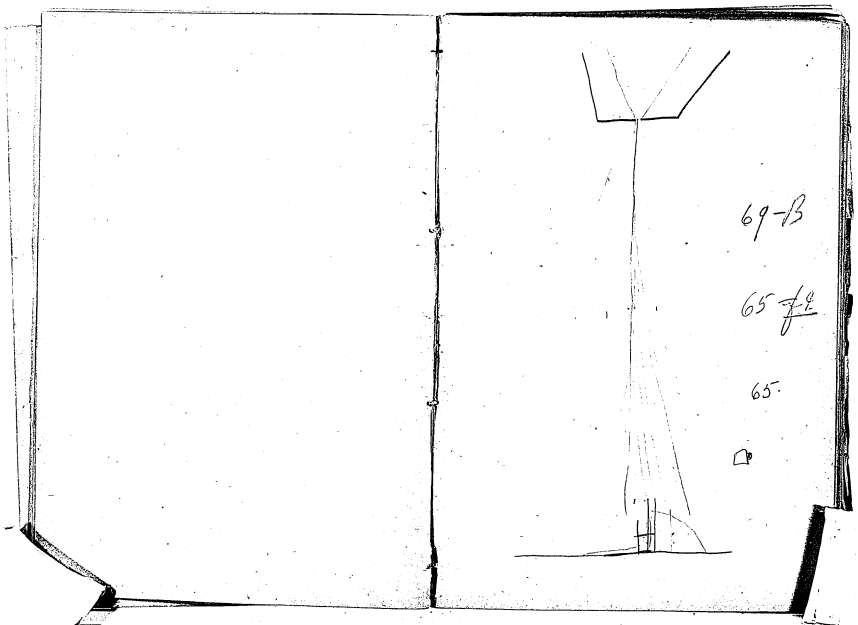


Something Curious




The ought to stop spark at X. but it is across low R multiple arc shot of it works then a 20@50 microfarad Condr across a station ought to stop spark at Every instrument which breaks shot in the system. Try but dont think it would work - as dead charged all time whether it breaks at X or not,

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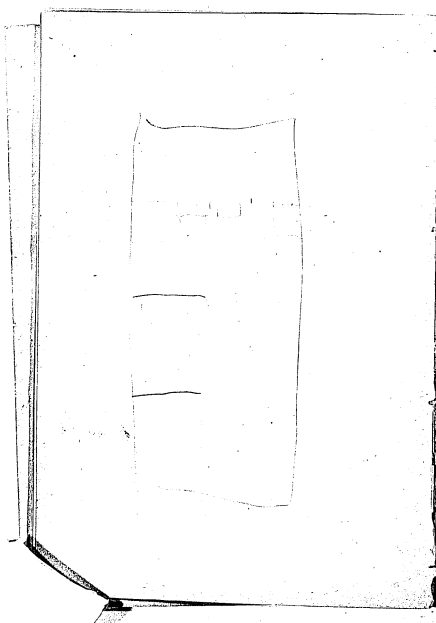

Agencies for Chemical action.

Hydraulic press, Sprengel with Mac Leod gauge.
Papin digester, Steam heat or chamber
Sand bath for sealed tubes,
Powerful 2 ton magnet General
Extension pole pieces, —
Heliostat for chem action by light.
Refrigerator —
Freezing chamber —
Water filter pump —
3 Electric Currents,
Fume closet, Steam bath
drying oven —
Squirrel fil press — Sponge precipitating
jars, 2 doz Bell jars

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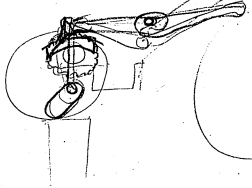
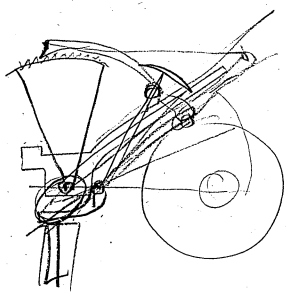


Nov 10 86
Hand
Test



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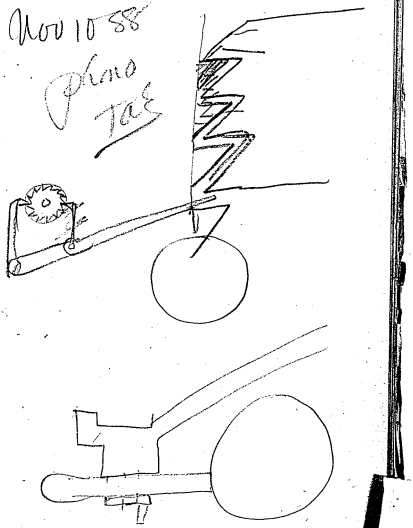
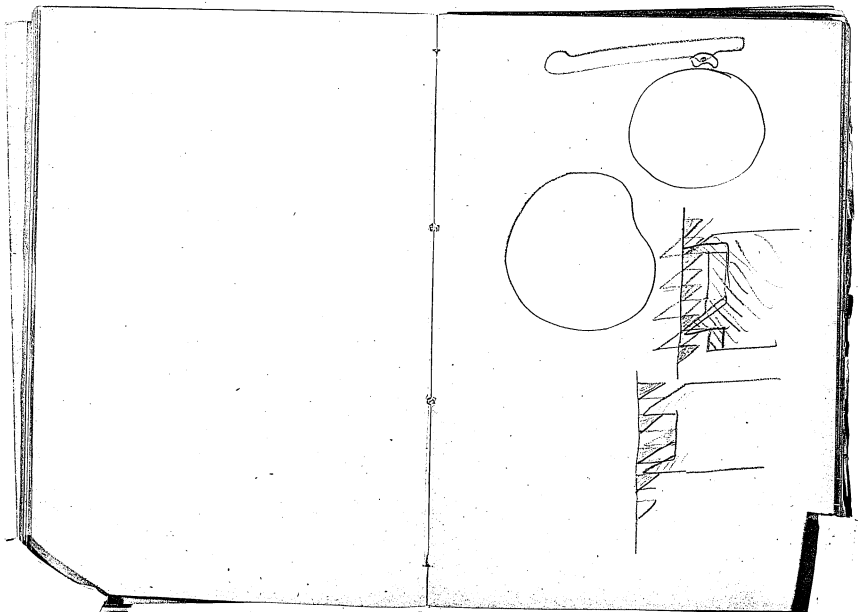
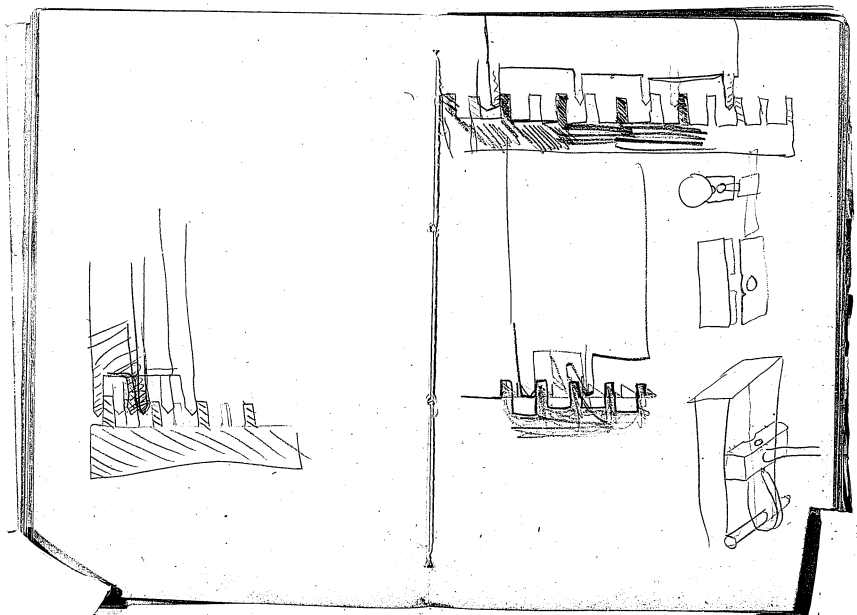
Φίλτο Τάξ







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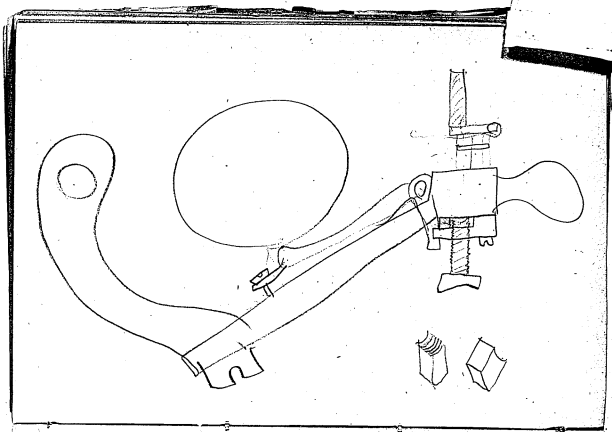

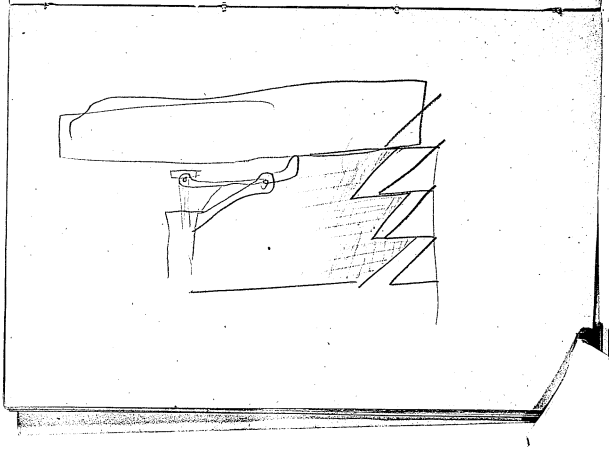

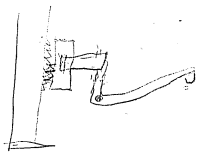


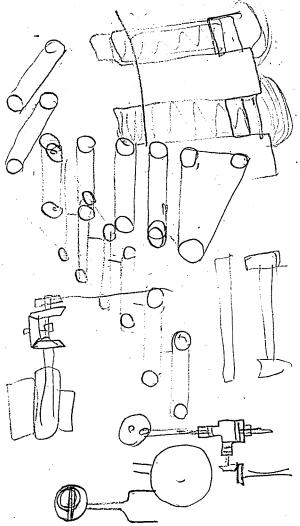

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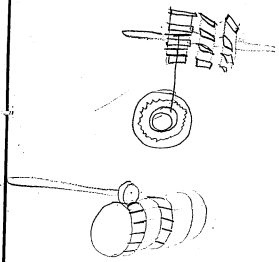
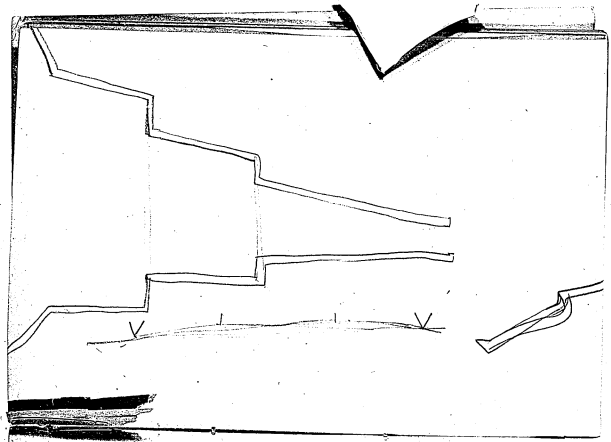
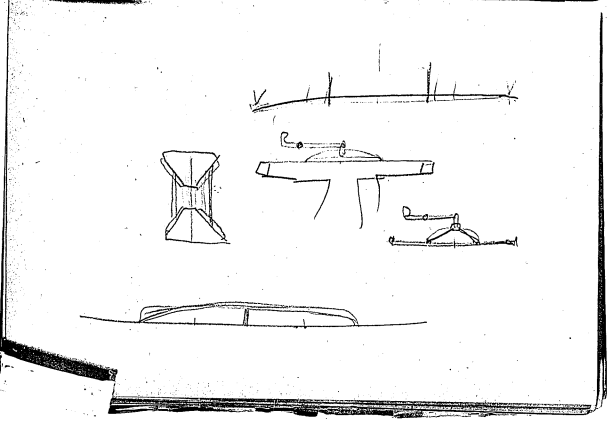
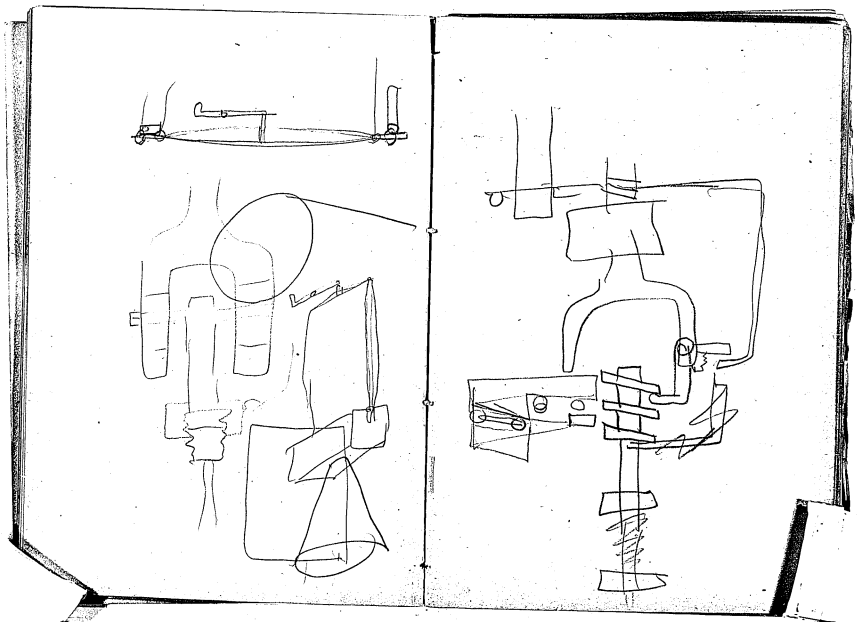
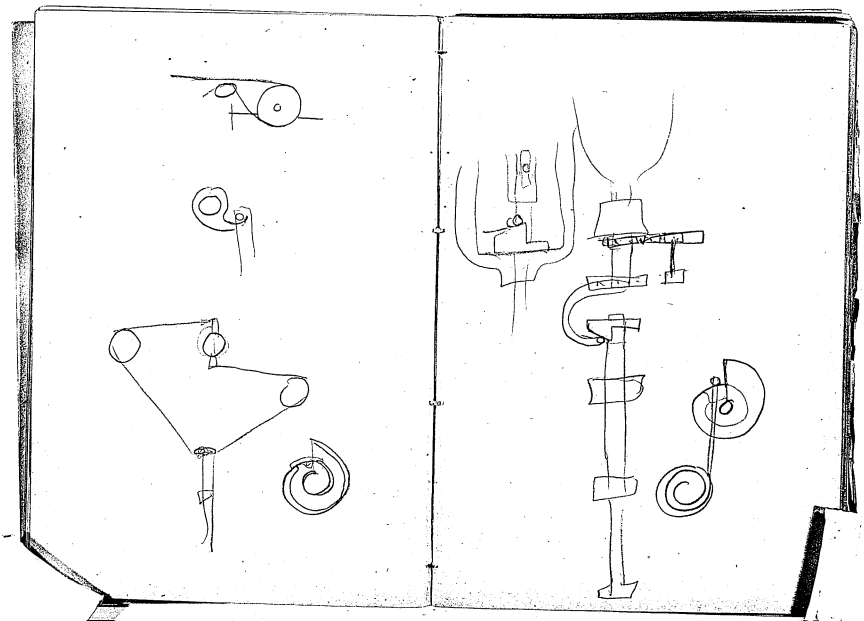
96

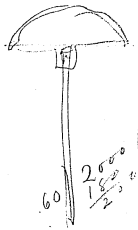


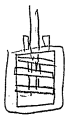


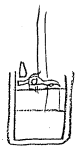


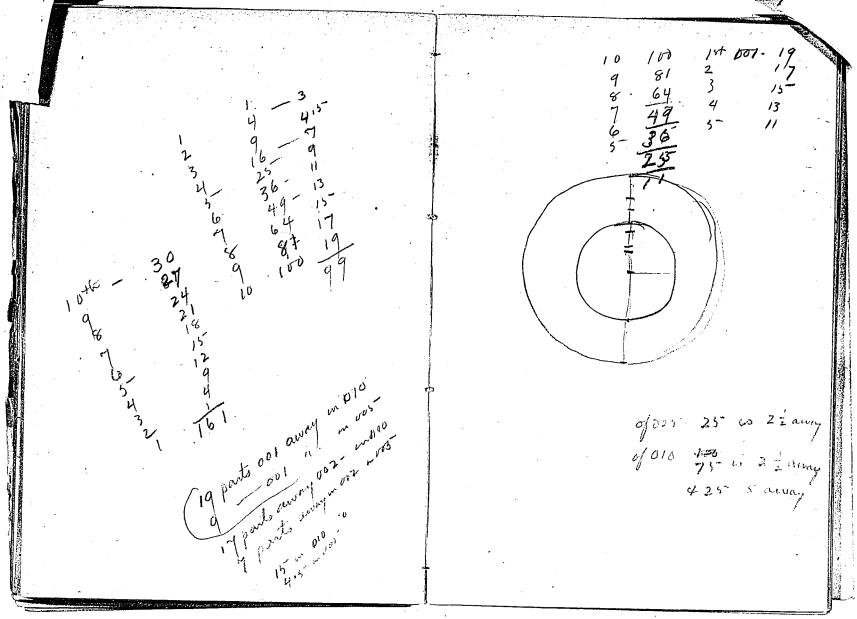





60
2000
1500
2
33
3






1 — 3
4 — 4 15
9 — 7
16 — 9
25 — 11
36 — 13
49 — 15
64 — 17
81 — 19
100
1 2 3 4 5 6 7 8 9 10
10 — 30
9 27
8 24
7 21
6 18
5 15
4 12
3 9
2 4
1 1
161
19 parts 001 away in 010
9 001 in 005
17 parts away 002 - 010
9 parts away 002 in 005
15 in 010
4 in 005
1st 001 - 19
2 17
3 15
4 13
5 11
10 100
9 81
8 64
7 49
6 36
5 25
of 025 25 to 2½ away
of 010 75 to 2½ away
of 25 5 away

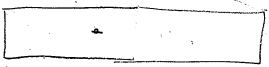
5·4

3 12

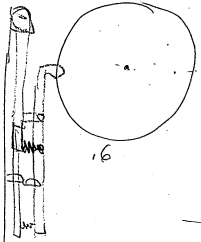
6 - 9

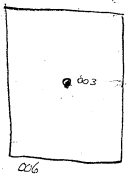
7.5 7.5

7 x 8

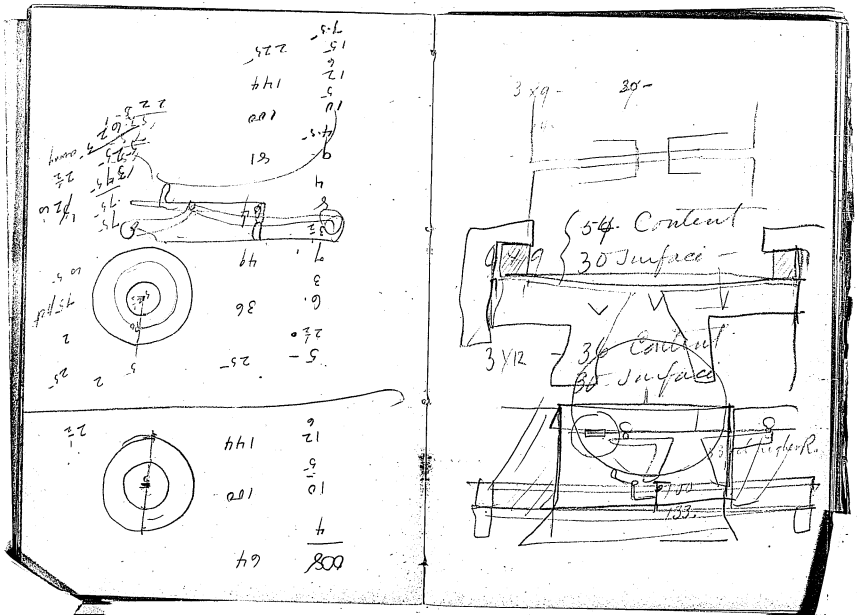


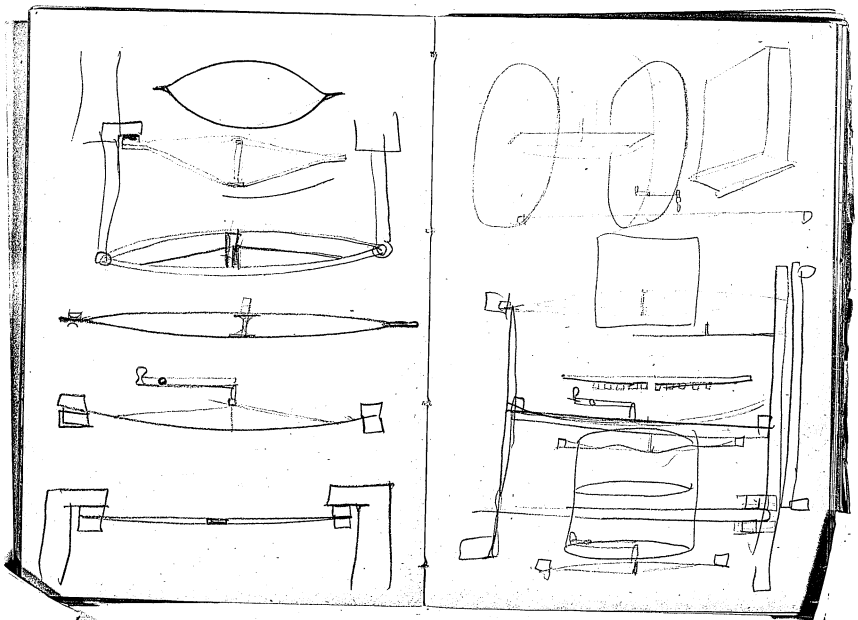
7.5
7.5
37.5
52.5
56.2

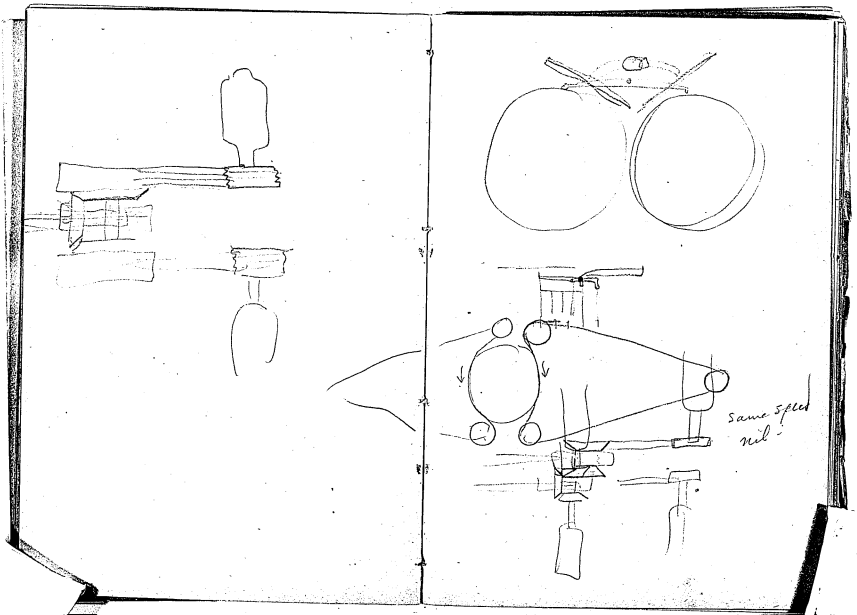


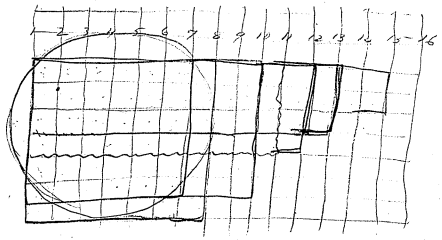




36


3 x 9 - 30"
54 Content
30 Surface
3 X 12 - 36 Content
Surface




same speed
nil



6

2/135-
6·75

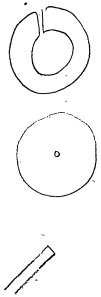
5 10

6-3

5×10

4

50-



24

$C_{24}$
$H_4$ mp 17
$O_{32}$
60

$C_{48}$
$N_8$ — mp 0
$O_{32}$
88

$C_{96}$ 24
$N_{16}$ — 4 16
$O_{32}$
144

10 - 100 20 32
20
2

2 | 5 20 — 112 | 5.16
100
120
36

8.16 | 16
2
2

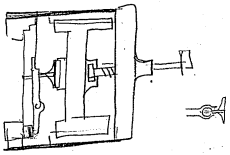
**Notebook, N-88-02-02**

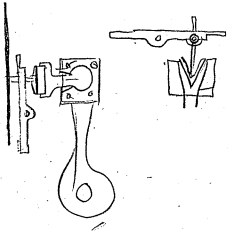
This notebook covers the period February 1888-April 1889. All entries are by Edison, except for one entry by Arthur E. Kennelly. Included are notes and drawings regarding a long-distance telephone transmitter using phonograph cylinder technology. There are also entries pertaining to battery experiments, disk phonographs, and a fluorescent light caveat; cost calculations relating to the buildings and employees required for an ore milling operation; and notes and drawings concerning electromagnetism. The pages are unnumbered, and the book has been used in both directions. Approximately 120 pages have been used.

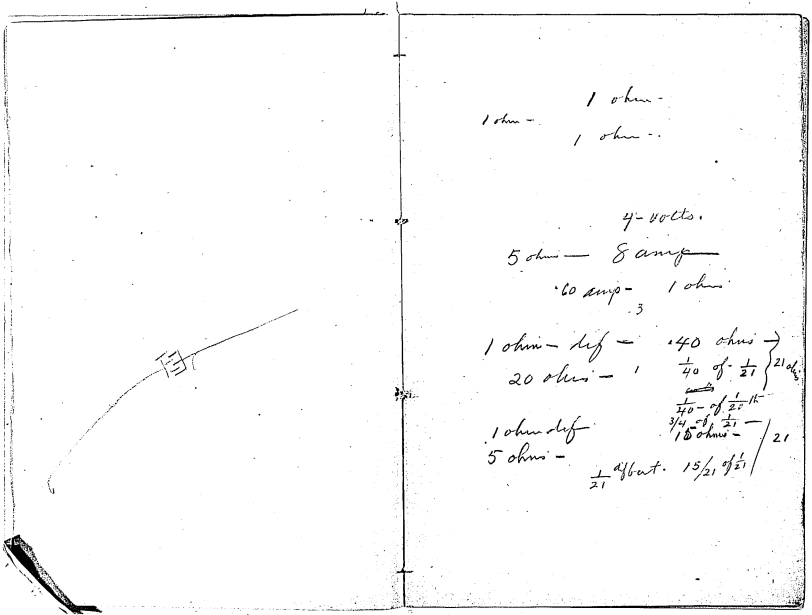
VE-172 N-88-02-02

Feby 2 1888

Long Distance Trans





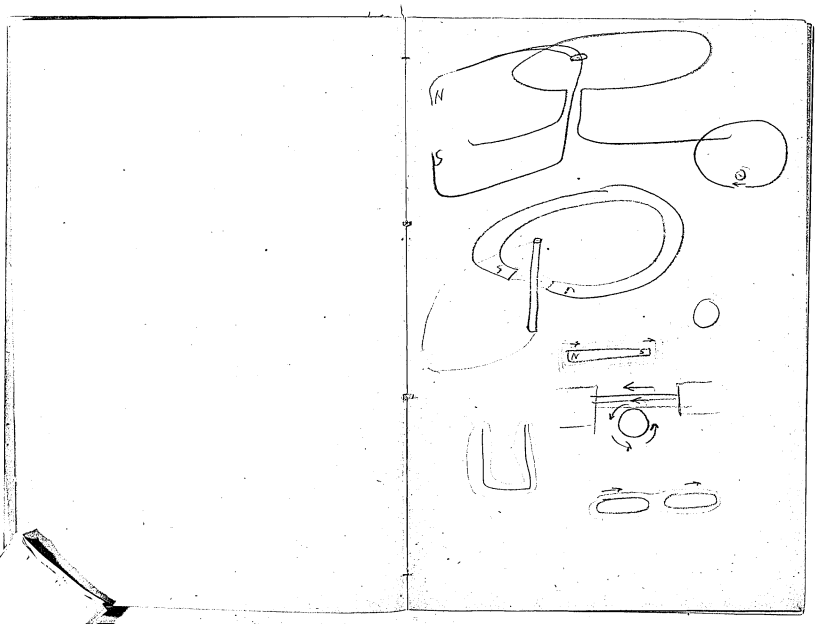

1 ohm -
1 ohm -
1 ohm -
4- volts.
5 ohm — 8 amp —
·60 amp - 1 ohm
·3
1 ohm - def — ·40 ohms →
20 ohms — 1 1/40 of 1/21 } 21 ohms
1/40 - of 1/20 th
3/4 - of 1/21 —
1 ohm def 15 ohms - } 21
5 ohms -
1/21 about. 15/21 of 1/21

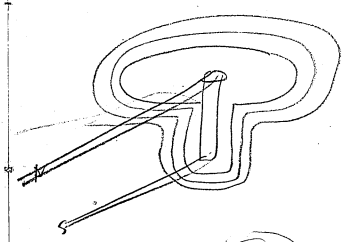
Feb 12 1888

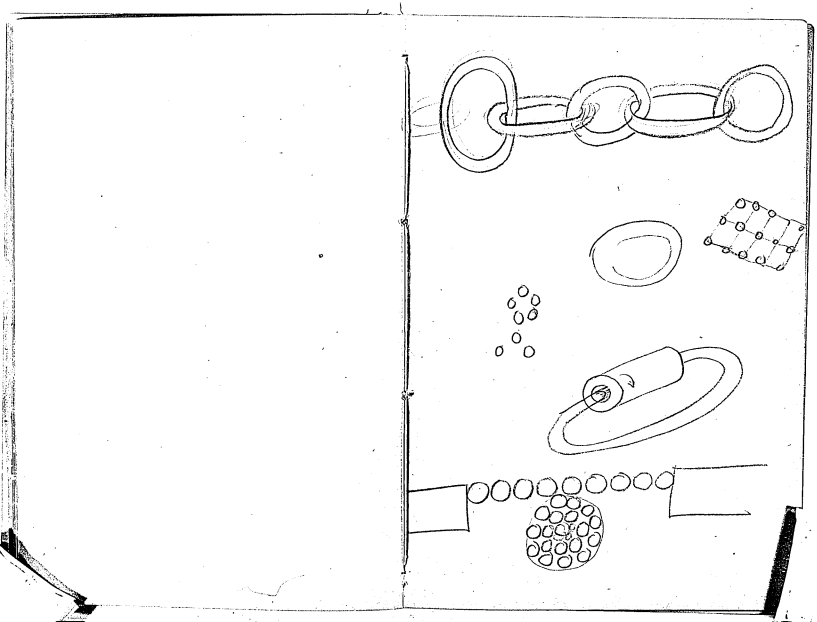
Try with a Mala graph. Chalk cylinder with 50 threads to make wooden like a thread of burnished paint talked to by Jacob Carbon transfer yet leaves a record sufficient to reproduce the sound. I think it will fused soon a film record A dose on paper but there is probably due to Oxidation of the surface. The paper

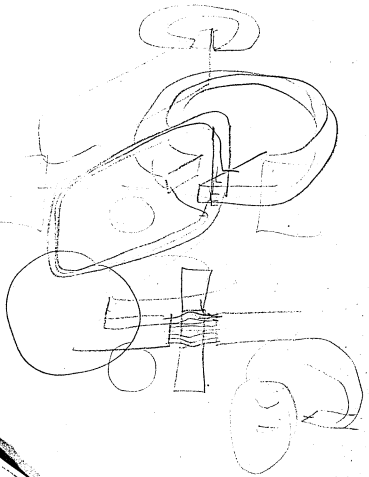
Perhaps a cylinder coated becomes of some substance like gelatin, or Lichens or glue & Malacca etc which would keep sufficiently moist to allow of Current passing Then the Oxidation & Hydrin would alter the friction at points & thus record irregularities

Try Aniline Violet mixed with good Celephone Lampblack ~~Electrotypers~~ Plumbago to make a quick drying Coherent paste for Clamps. also Some of the other anilines —

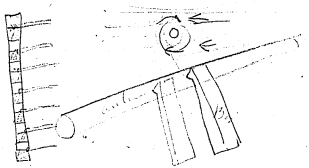


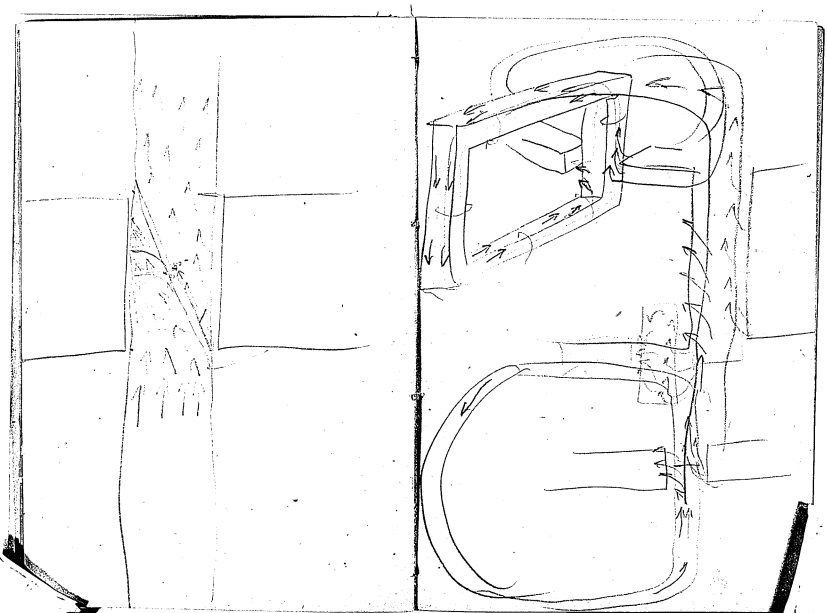


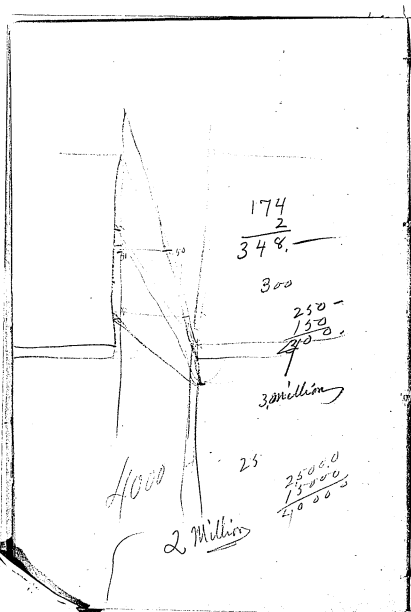


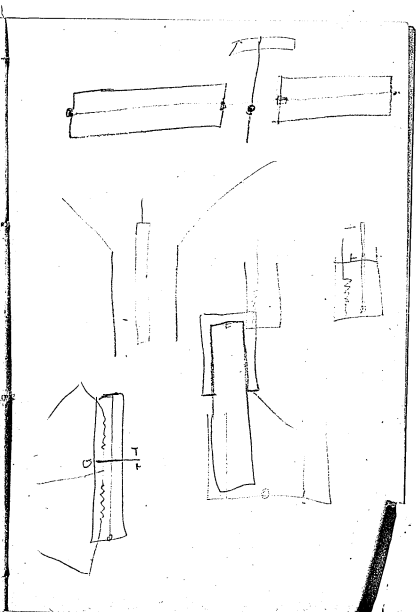


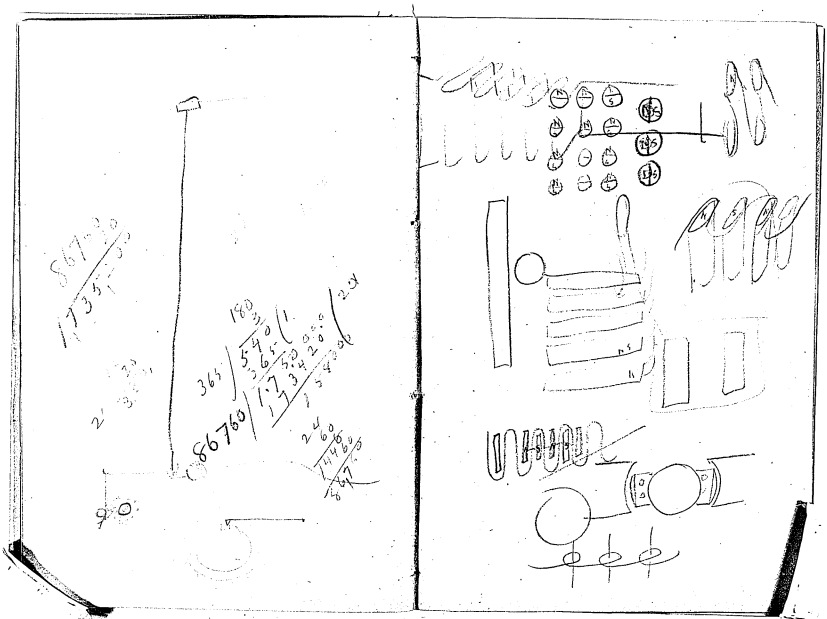
a wire pushed thro' a magnetic field. has matterless friction. not gross friction of matter but friction of the ether —
The ether is condensed by the magnetic stress across it. if the circuit of wire is a closed one we have a current & an electric stress and the friction is increased.

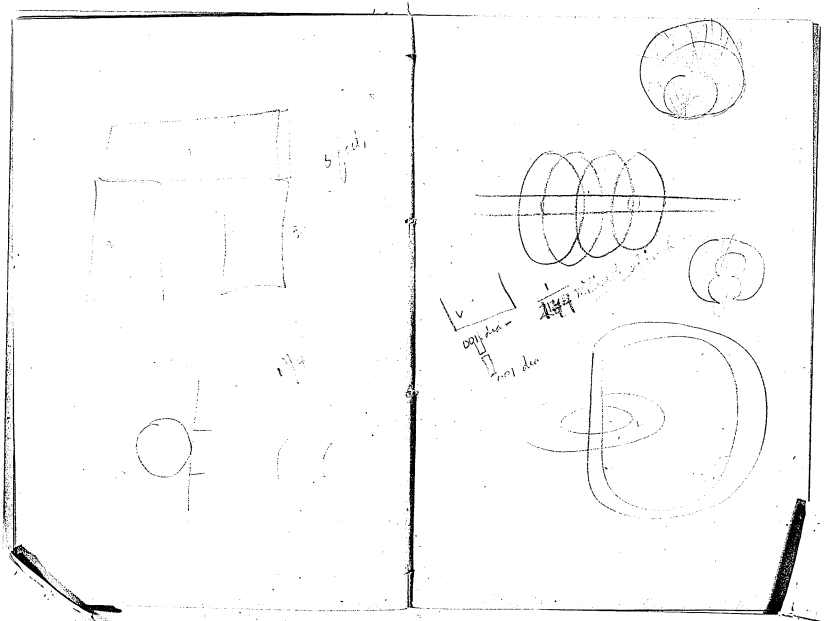


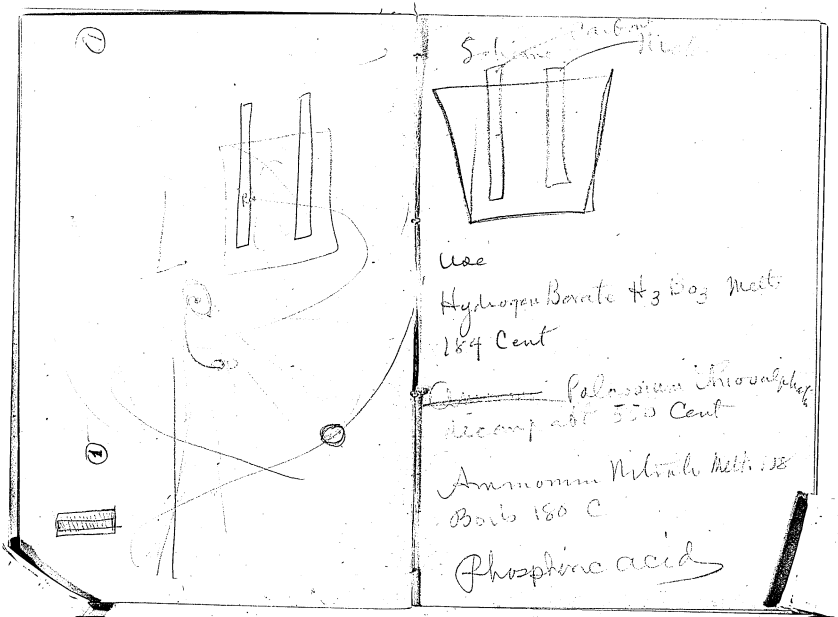



174
2
348
300
250
150
40
3 million
4000
25
25000
15000
40000
2 Million









Use
Hydrogen Borate $H_3BO_3$ Melt
184 Cent
Potassium Chloroplatinate
decomp abt 370 Cent
Ammonium Nitrate Melts 158
Boils 180 C
Phosphoric acid

δ Disulfuric acid
$H_2S_2O_7$ decomposed at
100 C

Hydrogen Potassium Sulphate
C —$HKSO_4$

Trihydrogen potassium disulphate
168 mp —

Potassium pyrosulphate
$HKS_2O_7$ — mp 168 — gives

Ammonium hypophosphate
$NH_4H_2PO_2$ — decomp 240 C

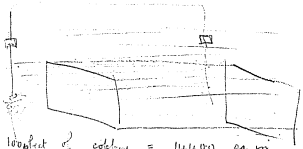
Energy $EC = \frac{E^2 R}{\pi}$

1 ampere Res. 230 volts @ .16 ω

3680 ω

3680 Watts = 4.8 HP

3680 volts



100 feet of copper = 11400 sq m

18,000 million cmils

and 1 foot has $\frac{10}{18,000,000,000}$ ohms

230 volts = 750 000 feet say 800 000 yards

total res. $\frac{800\,000}{18\,000\,000} = \frac{1}{22.50}$ ω

$\frac{E^2}{R} = \frac{3700 \times 3700 \times 22.50}{750} = 50$

Battery Exp. 1 2 3 4 5 6 7 8

Sodium Dihydrogen phosphate
$H_2Na\,PO_4$ mp 204 C

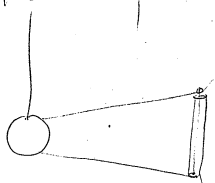
Di Sodium Hydrogen Arsenate
mp about 200 -
$H Na_2 As O_4$ —


Chromic acid —

In Reg Cl ammonia & Cu sulphate in Cylinder add small quantity of oil to cause particles of impurities to rise to surface of liquid & remove by a scoop

Graining by Grade Beeswax - Galaup wax
Wax pitch Oil - Oleic acid Stearic acid
Tallows — Sperm Oil Palm Oil

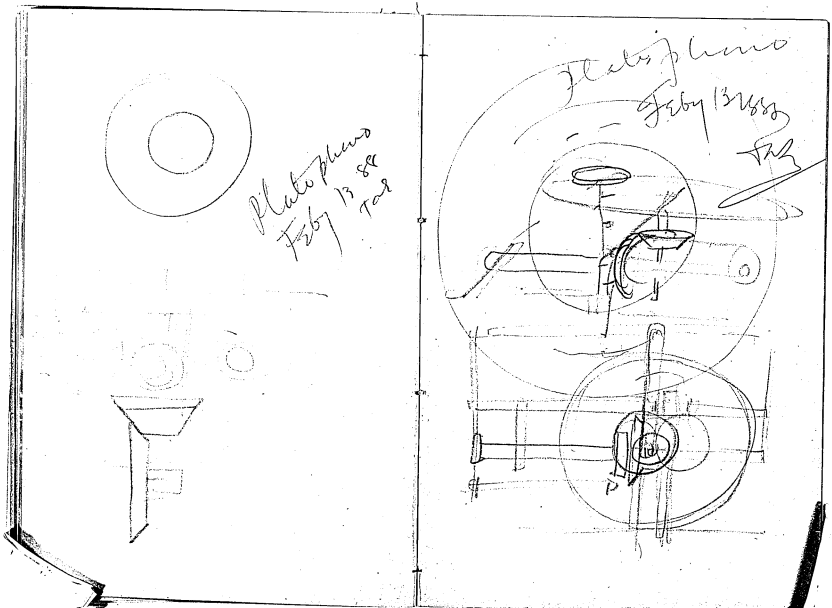
Kennedy

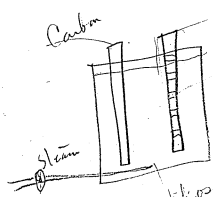


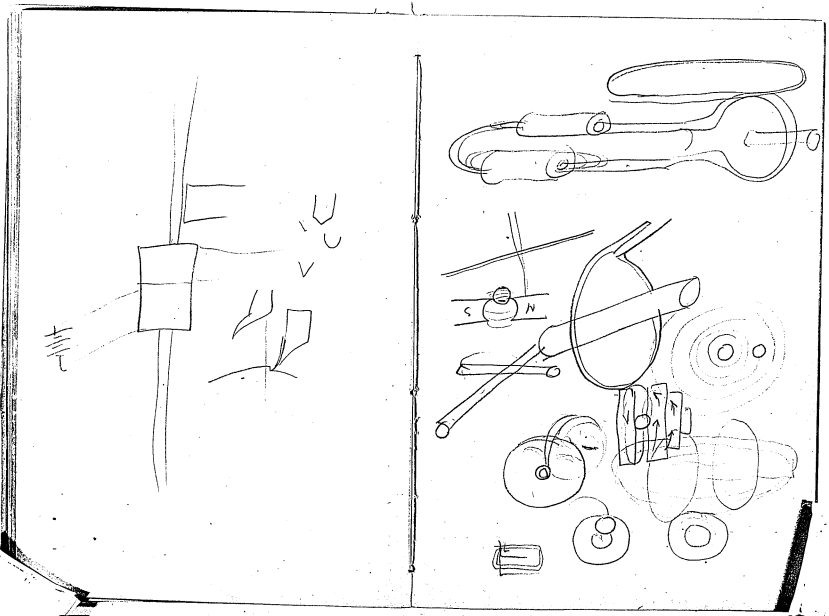
Iron tube with two voids containing dil. solutions of ferric salts & ferrous salts also conducting electrode

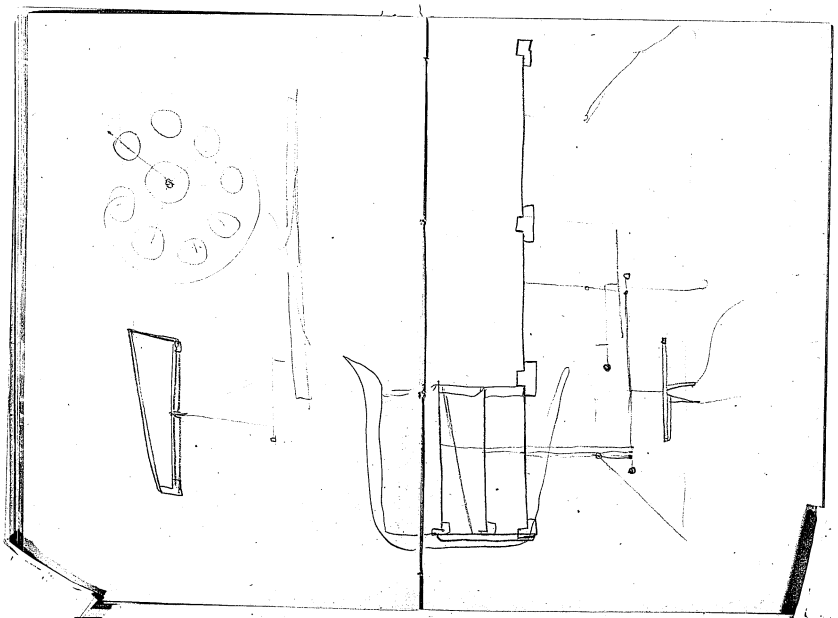
Magnet & pt

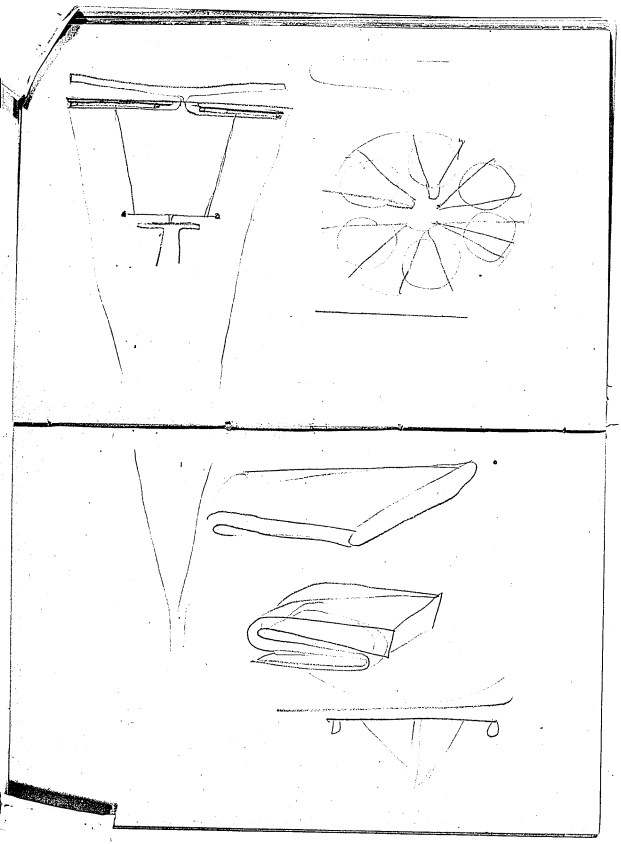
Tube square to just fit air space only-

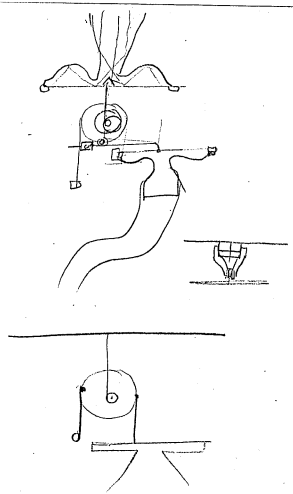

Plato plano
Feby 13 88
Tod
Plato plano
Feby 13 1988
FHS

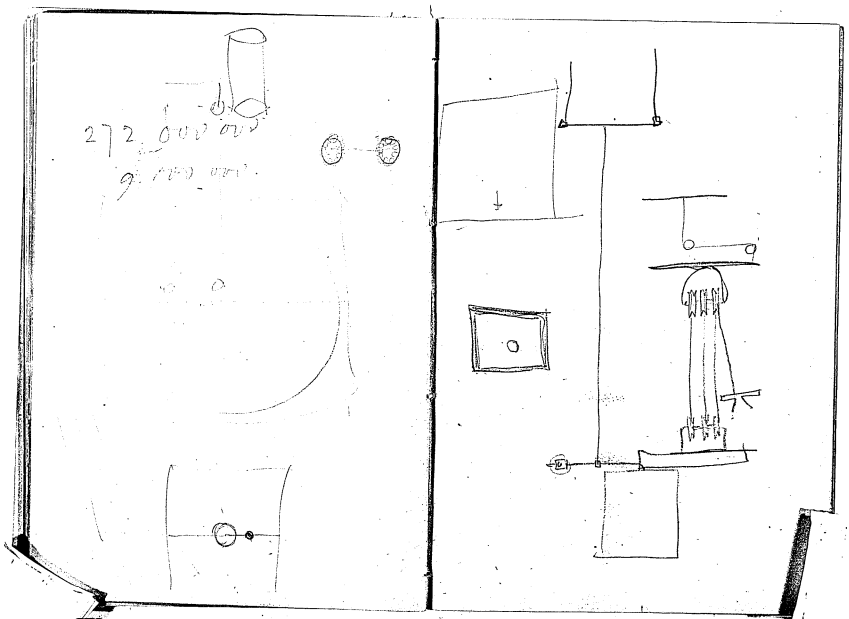

Carbon
Platinum
an oxide which conducts at room temp conducts at Red heat volumetrically
Red hot
Steam
phosphoric acid Red hot
Boric acid

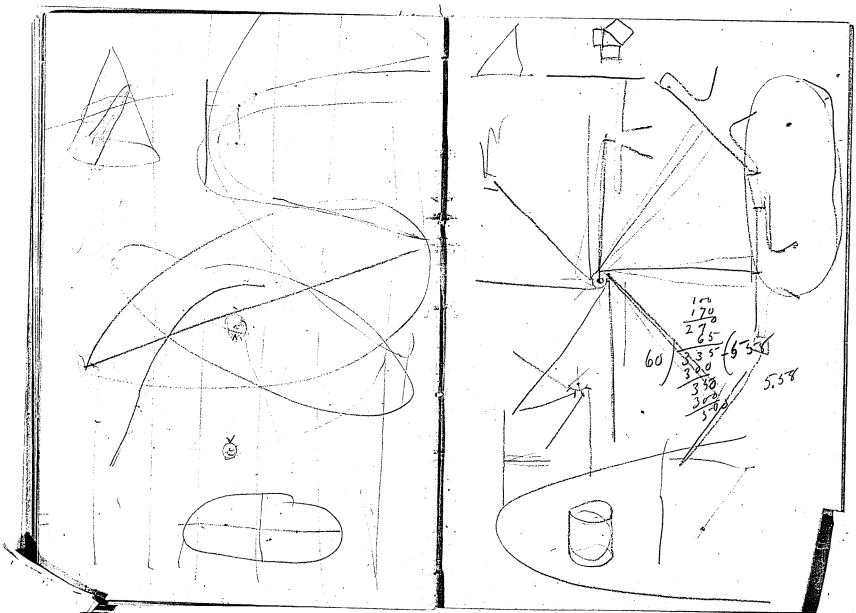

S
N

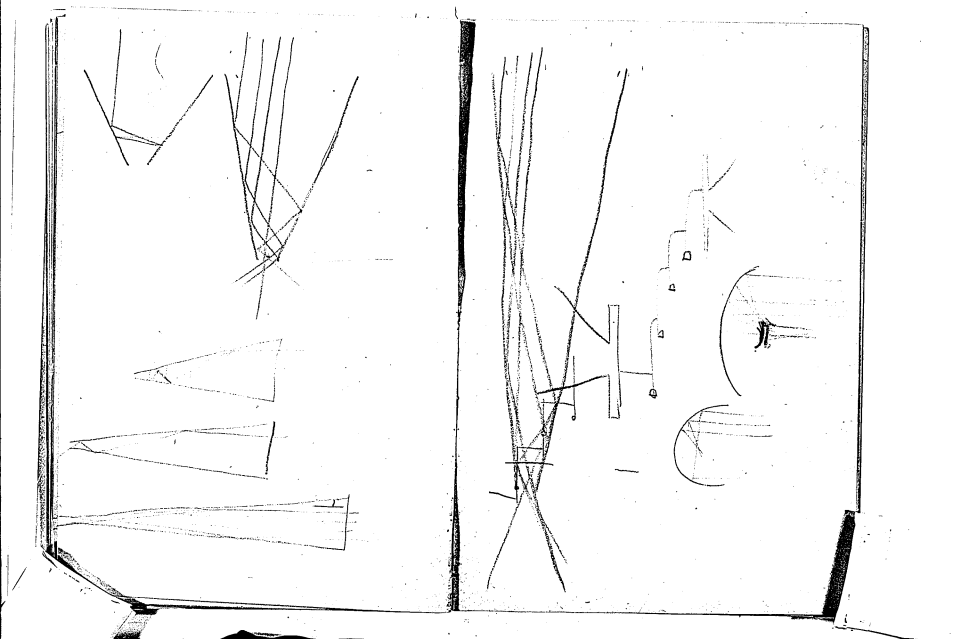


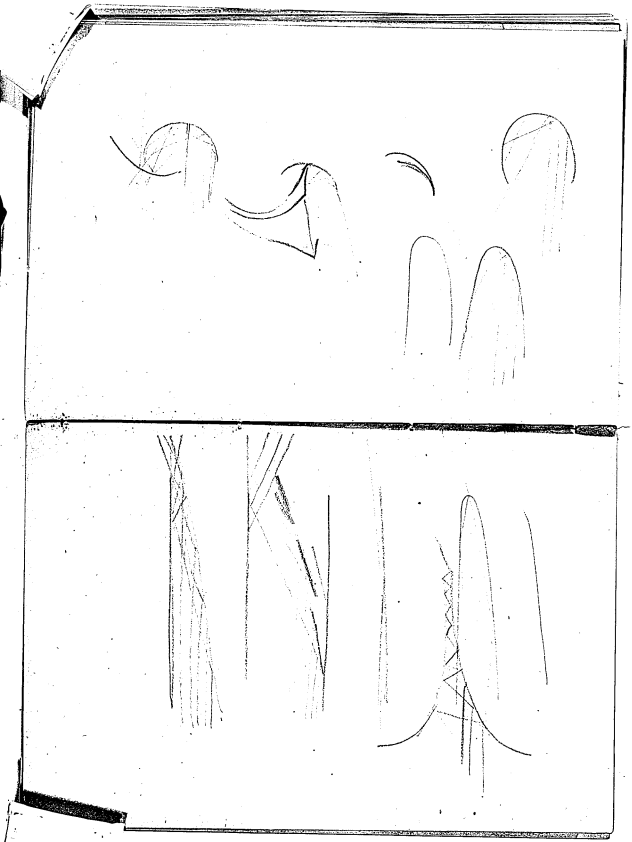


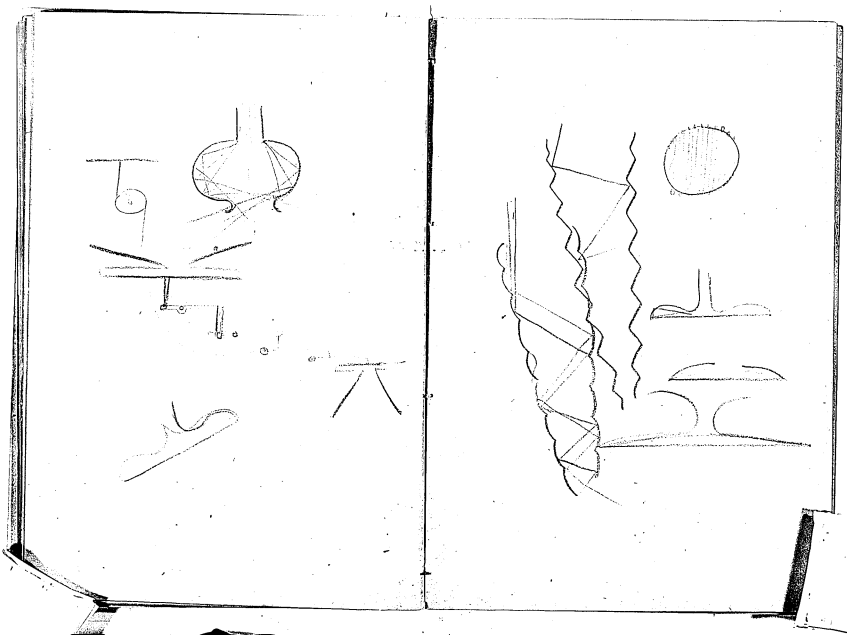


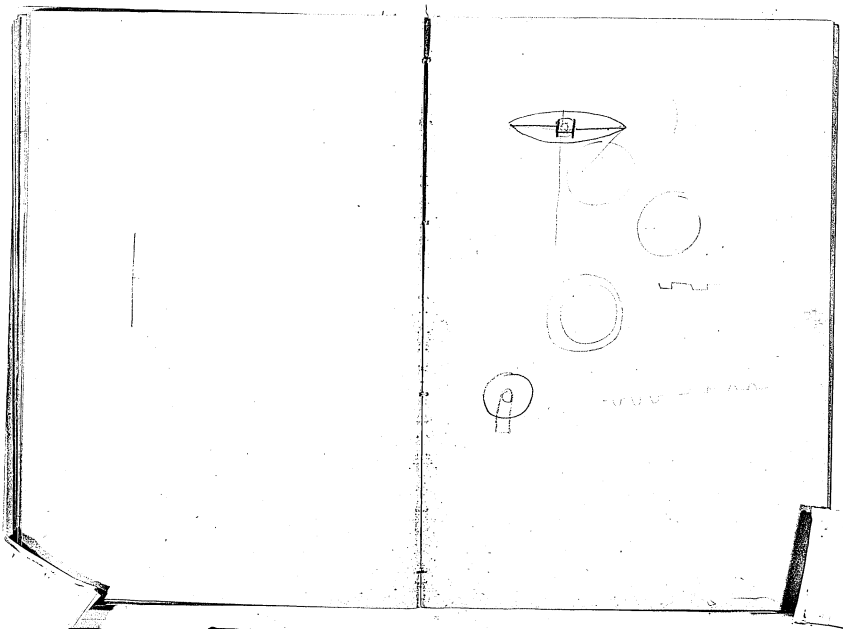


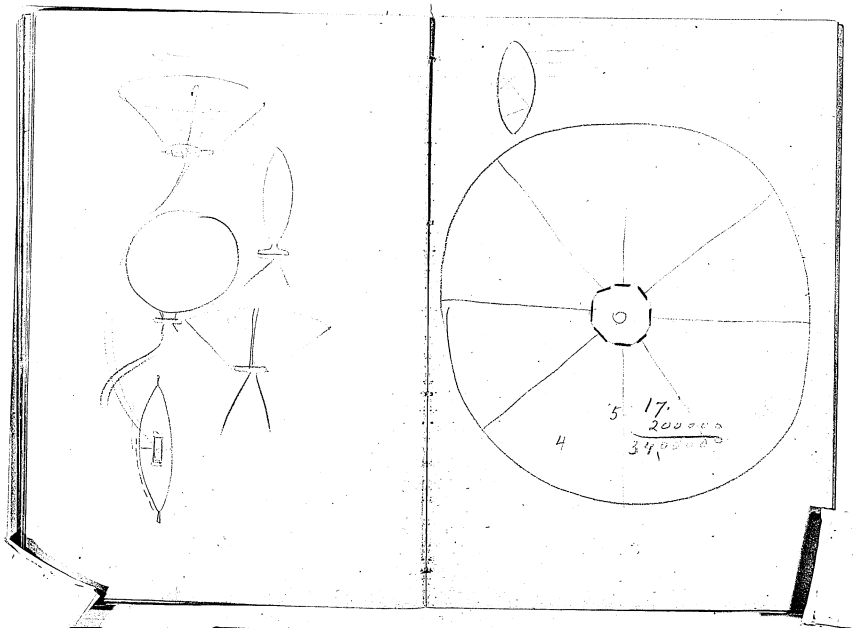

60
5.58

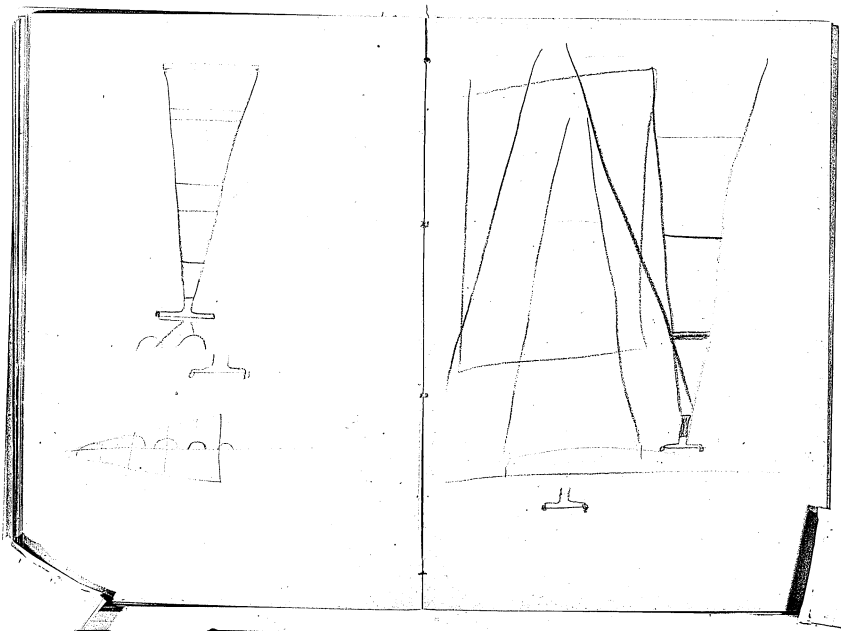


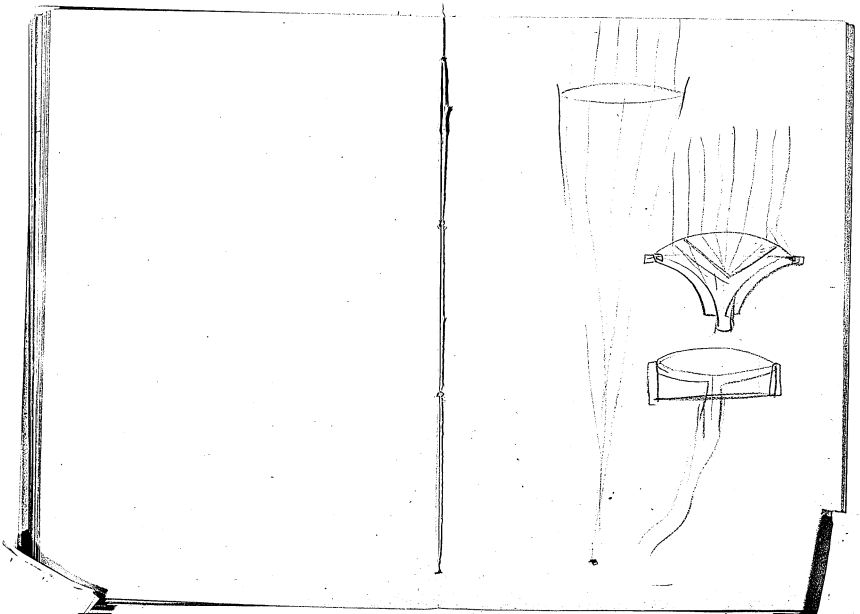


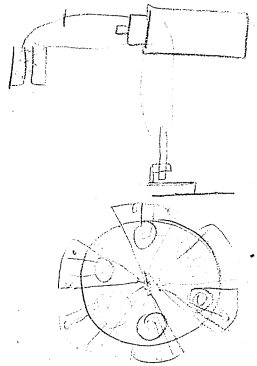


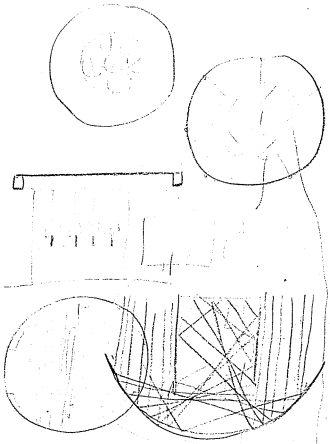


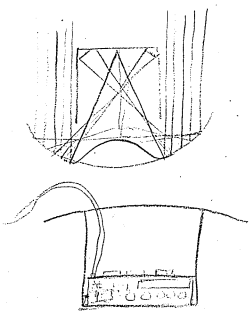

5
17.
200000
4
340000

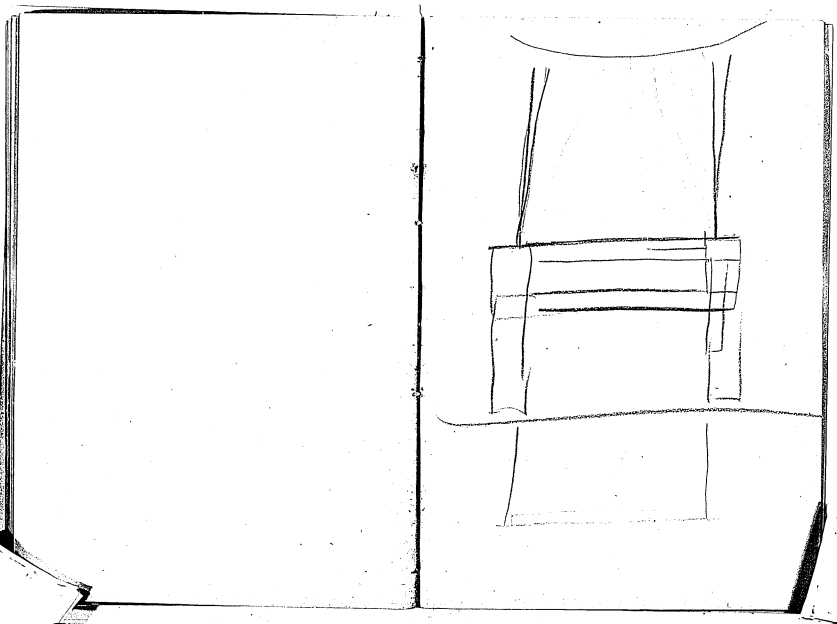


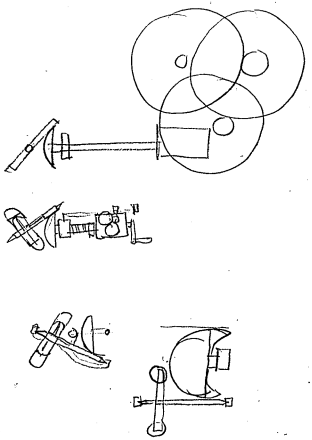


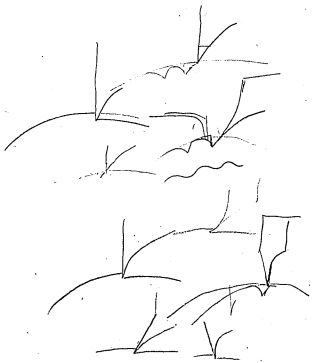


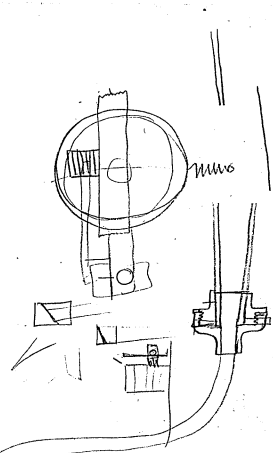












750 — 750 — pm

1500

200 —

MLOIs 1,500,000
SRCs 750,000
2,250,000

750,000

6. 300,000. 174
348.

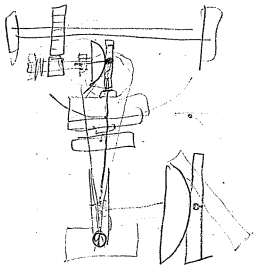
300

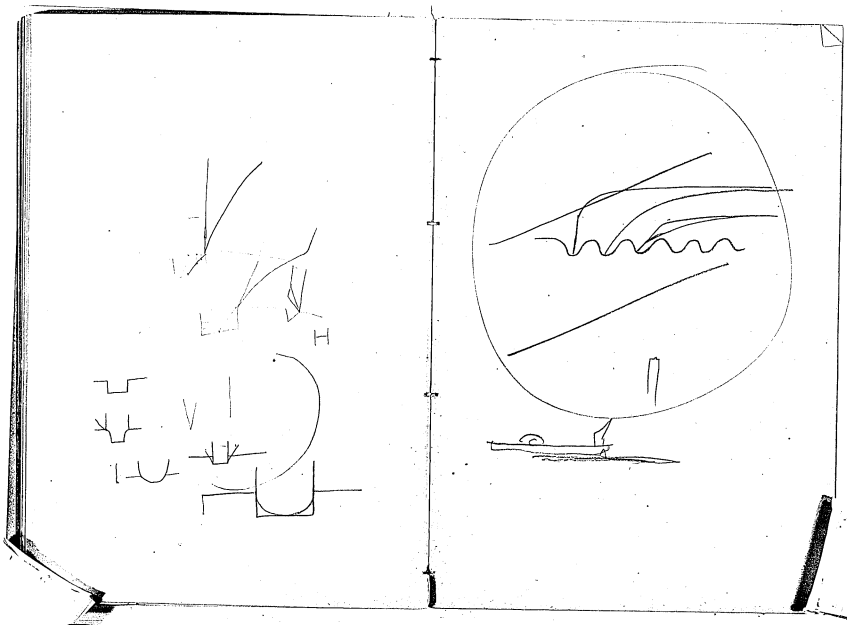
750,000

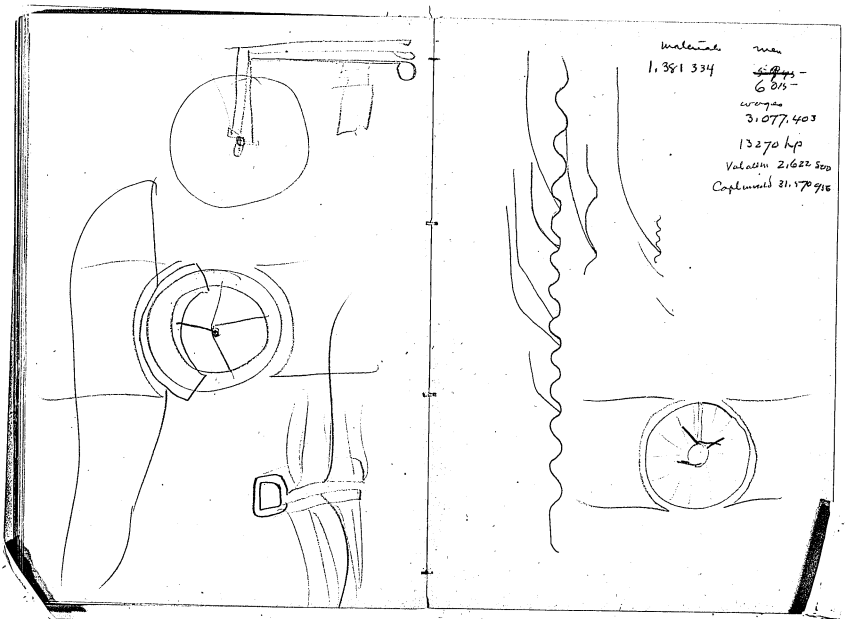
4,250,000 1,500,000
2,250,000

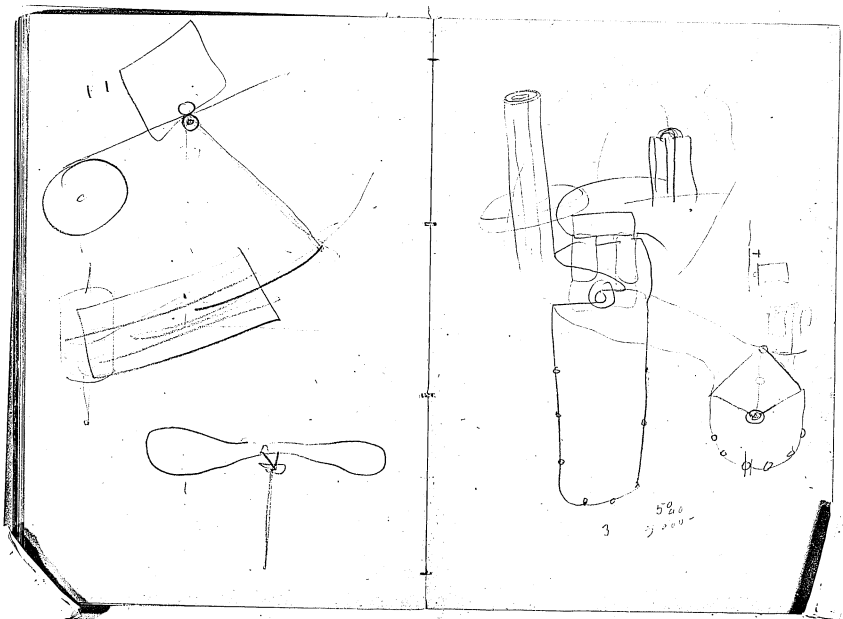
4. 1/2 Cash 1/2 Stock

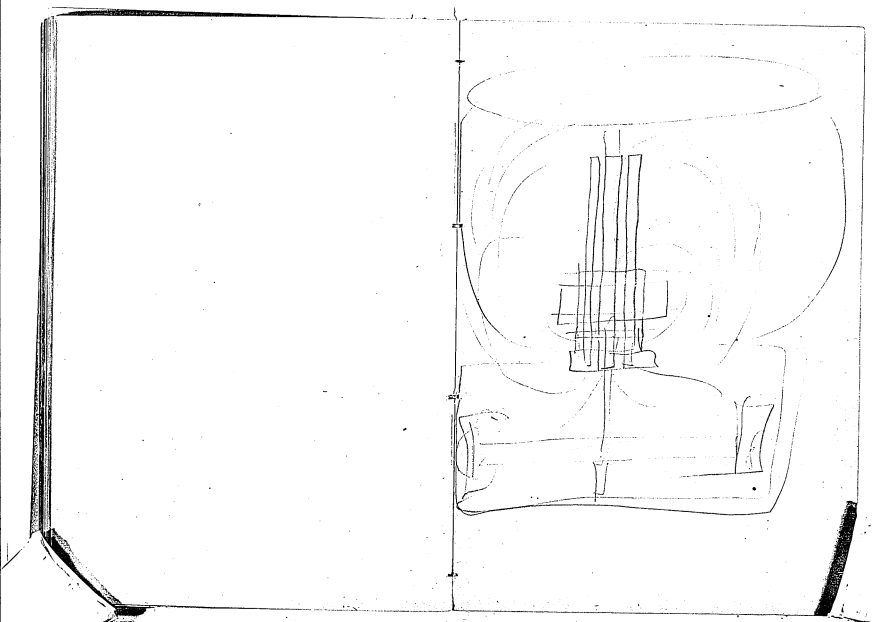
1,125,000
2,000,000 working Cash
2,625,000
1,125,000
3,750,000
4,250,000

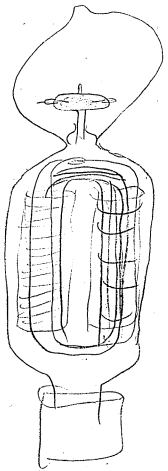



E
H

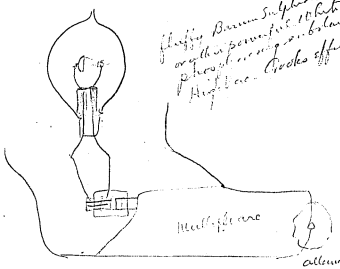

Materials
1,381 334
Men
~~Shipping~~ -
6 D/S -
Wages
3,077,403
13270 hp
Valuation 2,622 500
Capitalized 21,170 916

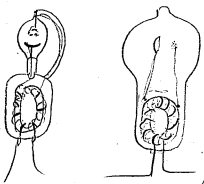






April 12 Phono T & T Co



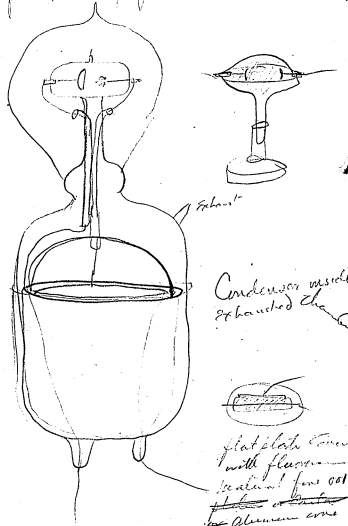



secondary of transformer

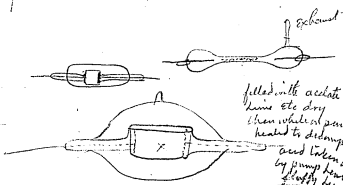
primary

Lamps in Multiple

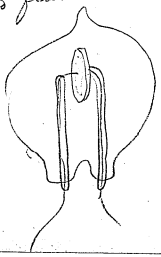
April 12 1887 phono + Electric light Car



April 12 1889 Fluorescent Cav

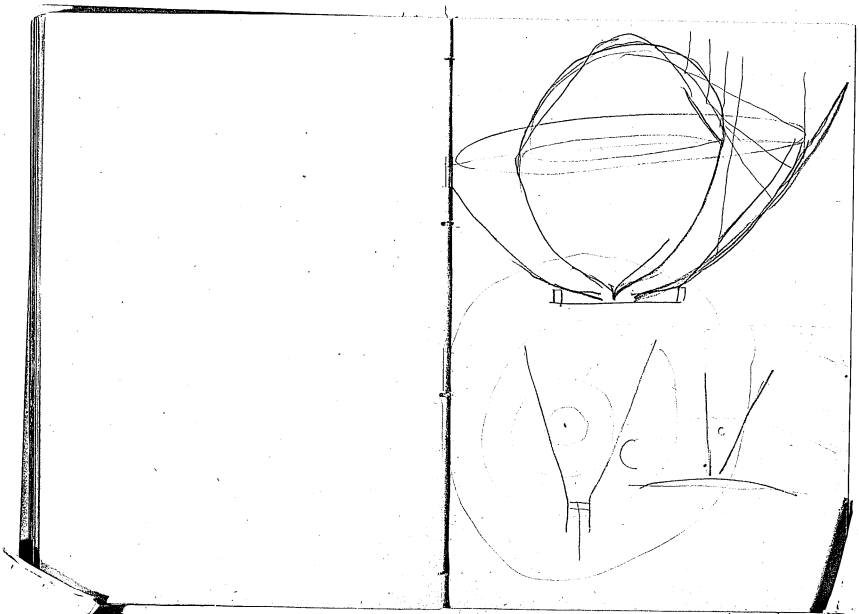



X Fluorescent material of uniform
wires are fused or pressed
The static stress of
determinations Can be
to fluorescence



April 12 1889 Phenotek Caveat

Sulphur is very powerful absorber of
Ultra violet rays. Hence Sulphur in Barium
Sulphide ~~chlorophosphorescence~~ Baryta Vibratis
or rather fluorescence - Lenard -
a polishing powder of Sulphur with an
infra chromical layer of Barium oxide
~~sulphur~~ with ~~be~~ brass point bound
fluorescent



Possible way —

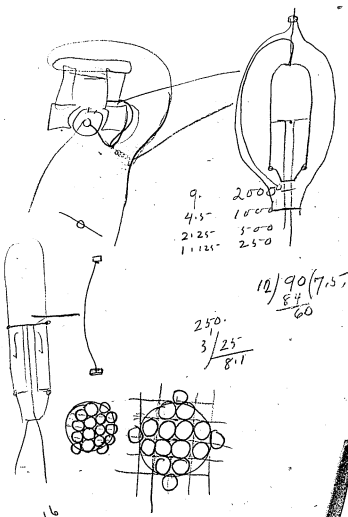
German silver, annular
Separate Excitation — Req magnetic devices vary field —

9.S armature — shunt wound —
must put to effect mechanical resolution by worm of Res box.

9.S. Extra brush shunt field from this —

8/5000 winding

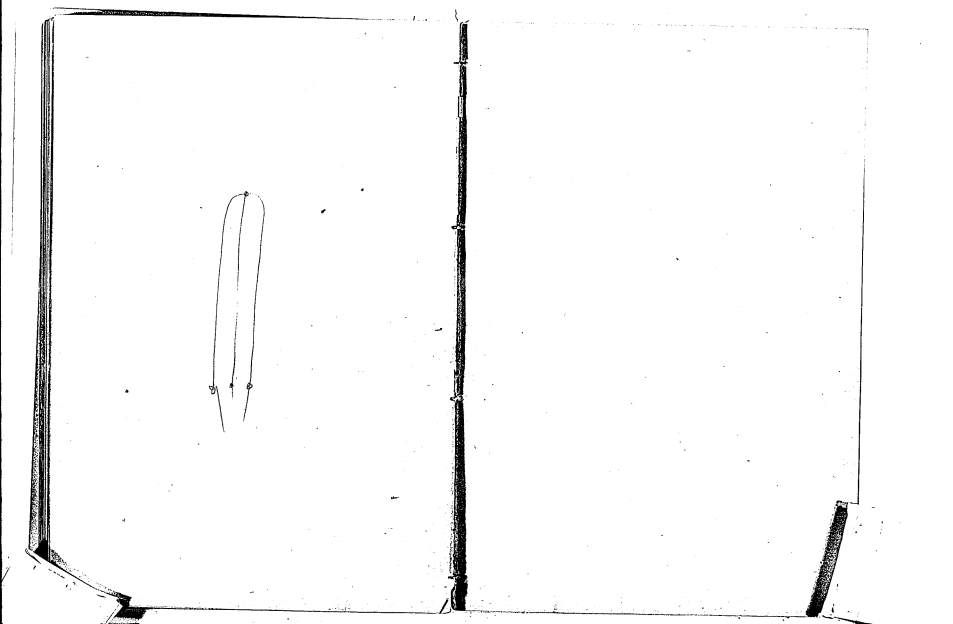
20.
2.0
4.0 ohm
10
25.




10/90/7.5
84
60

250.
3/25
8.1

16



1239000

534 000
1 707 000
2 041 000
1 234 000
807 000
-1 239 000
807 000

(1.6

195
200
3.5
245
3.500

384
290
94

248
145
103

290
98
388

176

2 250
3 000

213
47
260

900

374

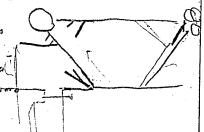
121
43
164
1 000
236
964

400

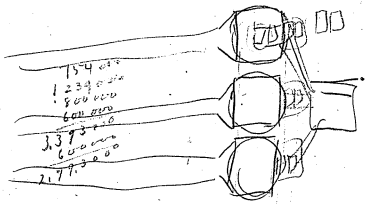
119
23
142

Transmission

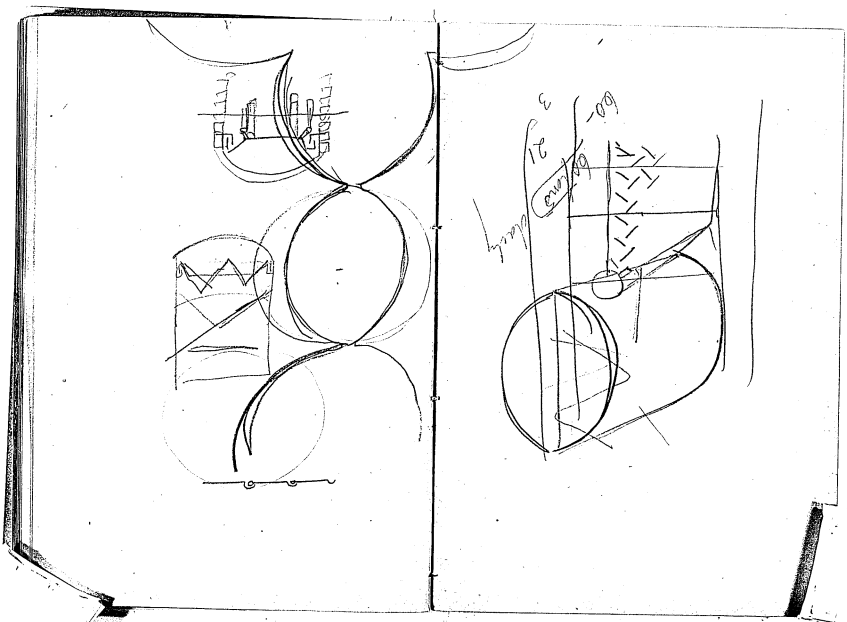
| | |
|---|---|
| Various purchased | 20,470,000 |
| & Materials used | 2 894 000 |
| Wages employed | 31688 |
| Wages | 9,538 000 |
| HP | 24,536 |
| Various machinery | 3,211 000 |
| Capital | 61,782 000 |

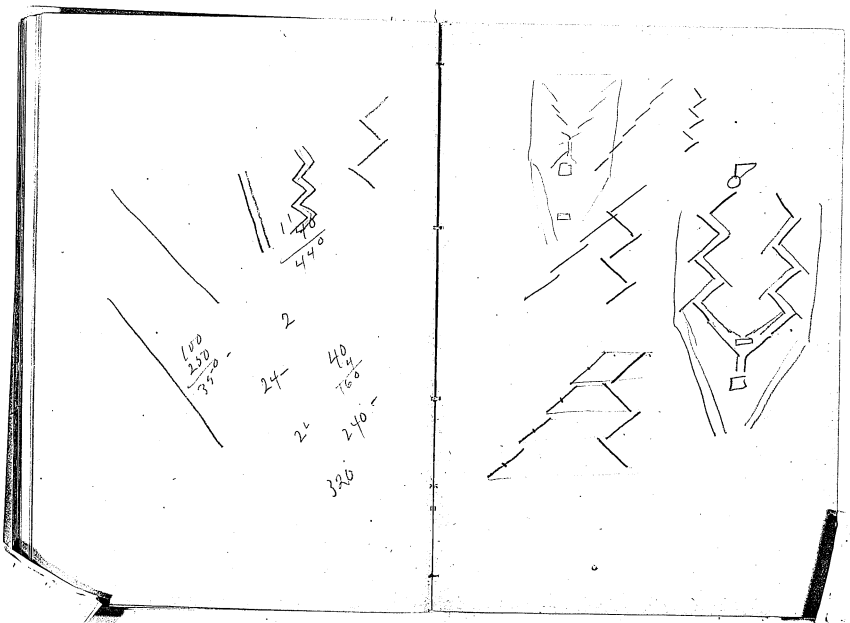


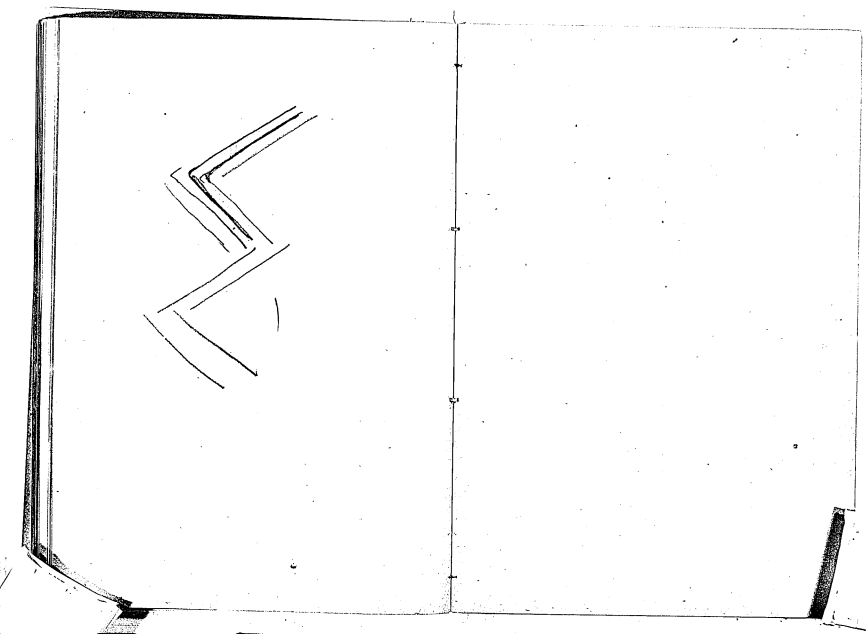
Materials manufactured 4.4
Wages factor 1 81
Various productive 2,90



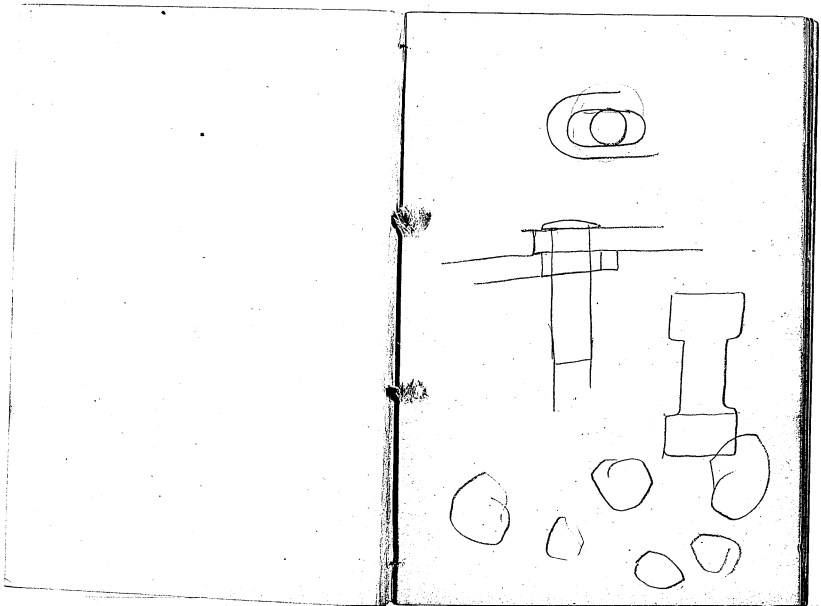
754 000
1 234 000
800 000
600 000
3 373 000
600 000
2 773 000

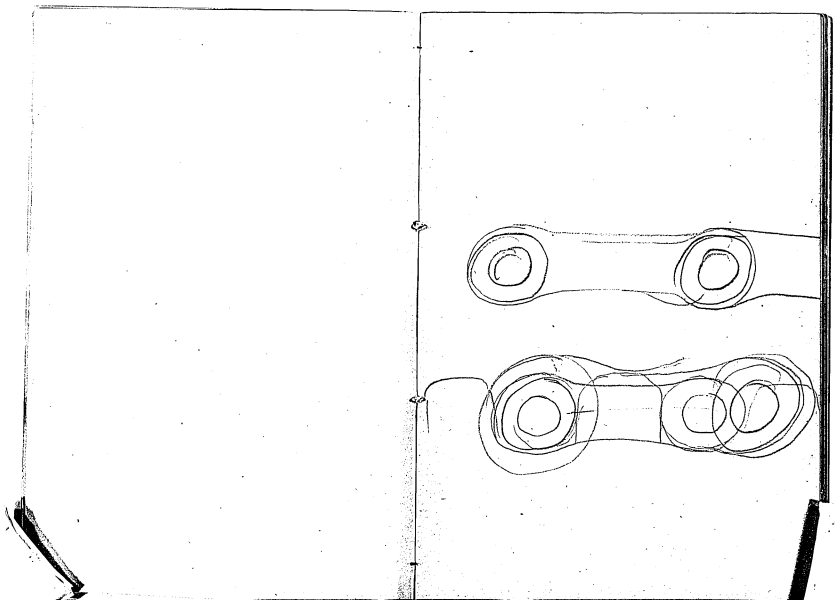


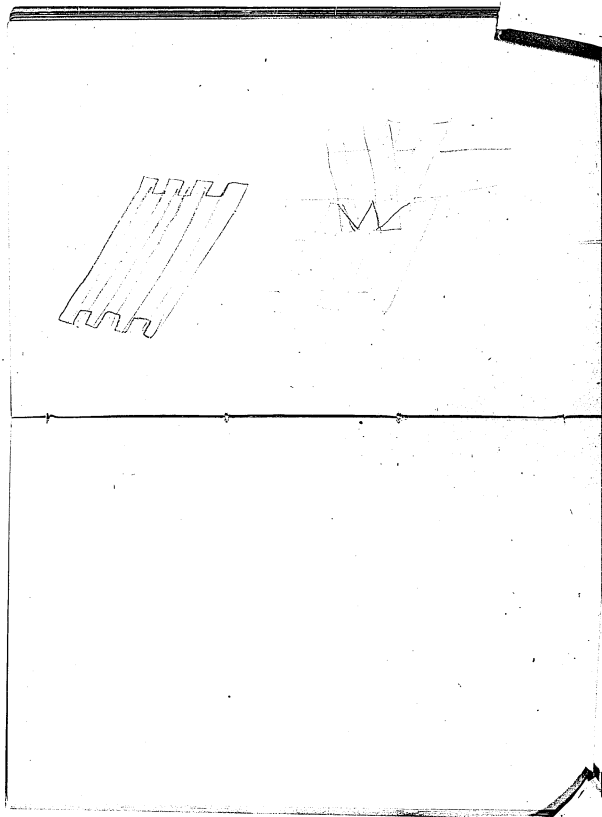

140
250
390
2
24
40
760
24
240
320
1
440

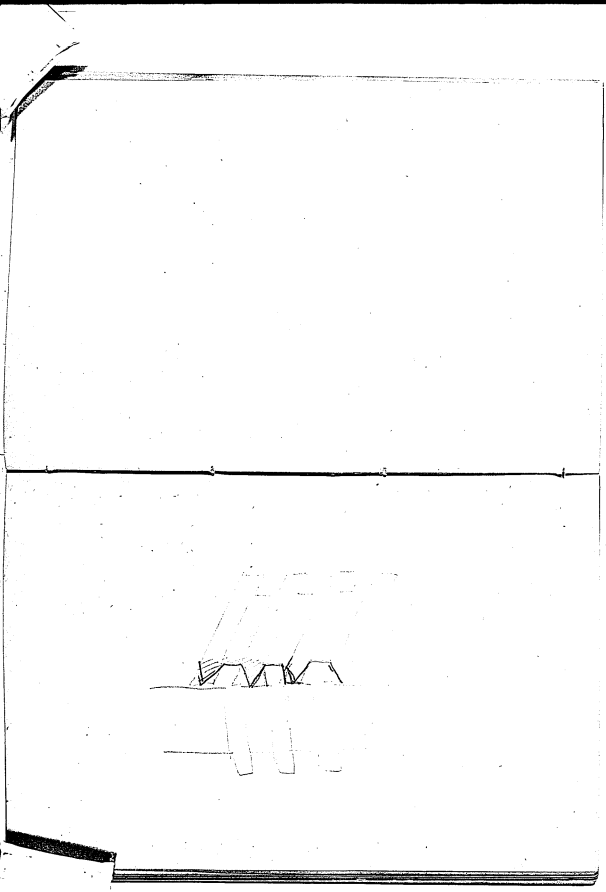


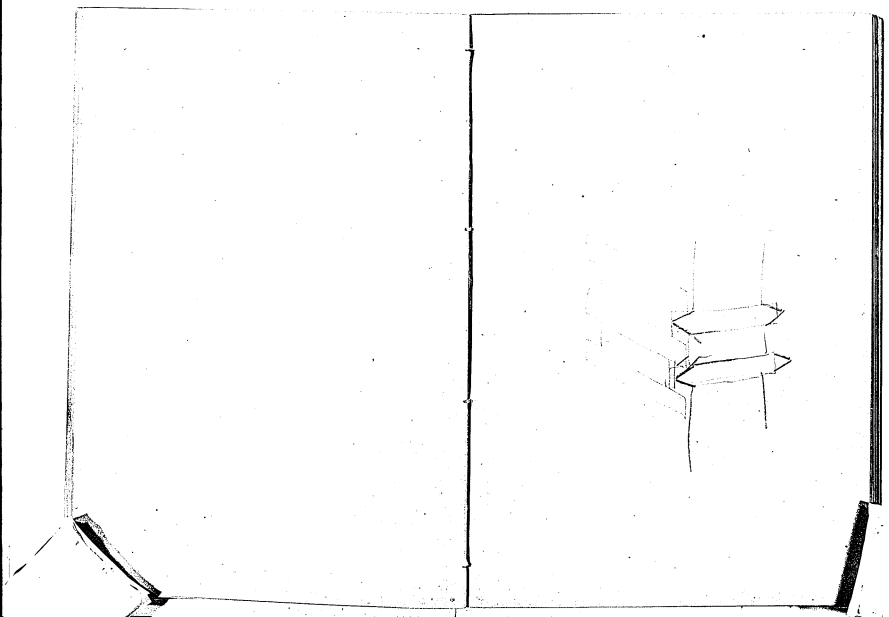
[THIS BOOK WAS USED IN BOTH DIRECTIONS. THE FOLLOWING PAGES WERE FILMED FROM THE BACK END FORWARD.]

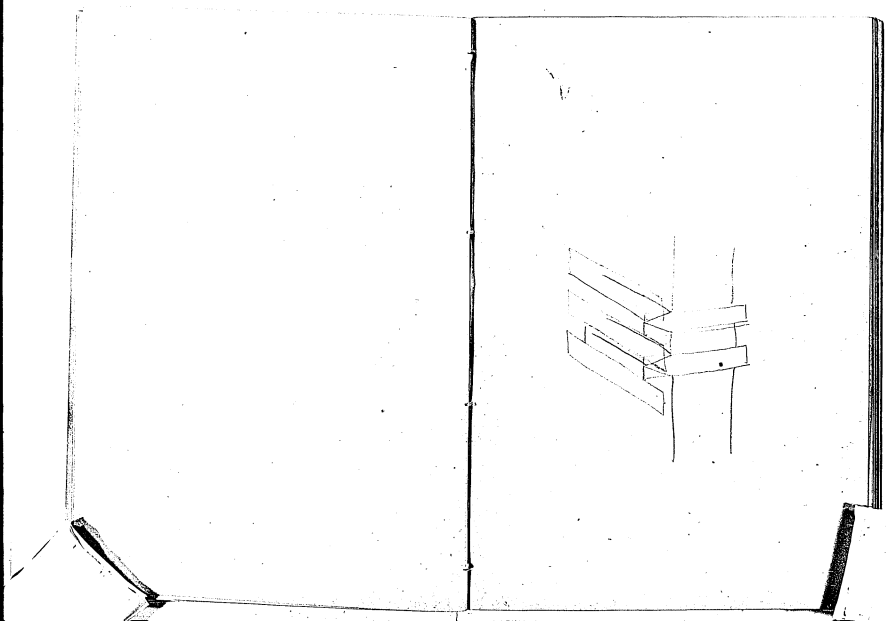


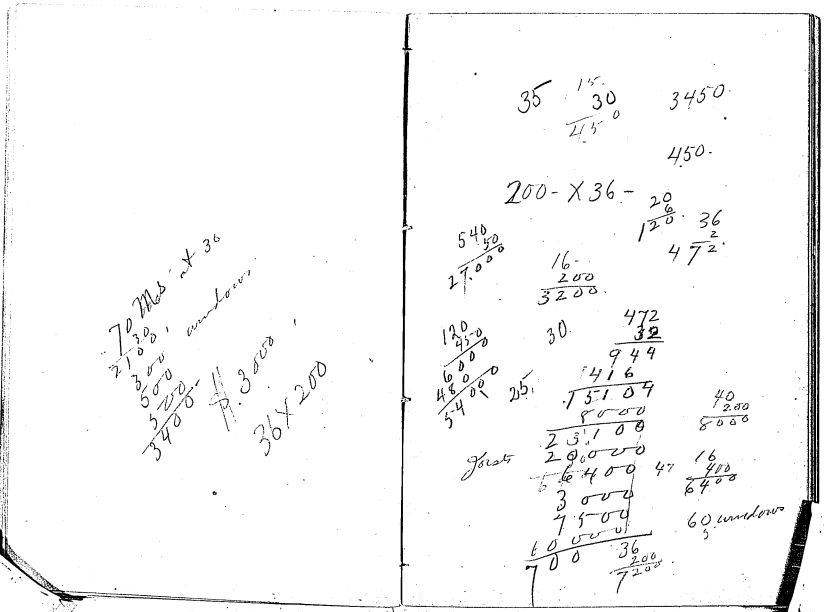


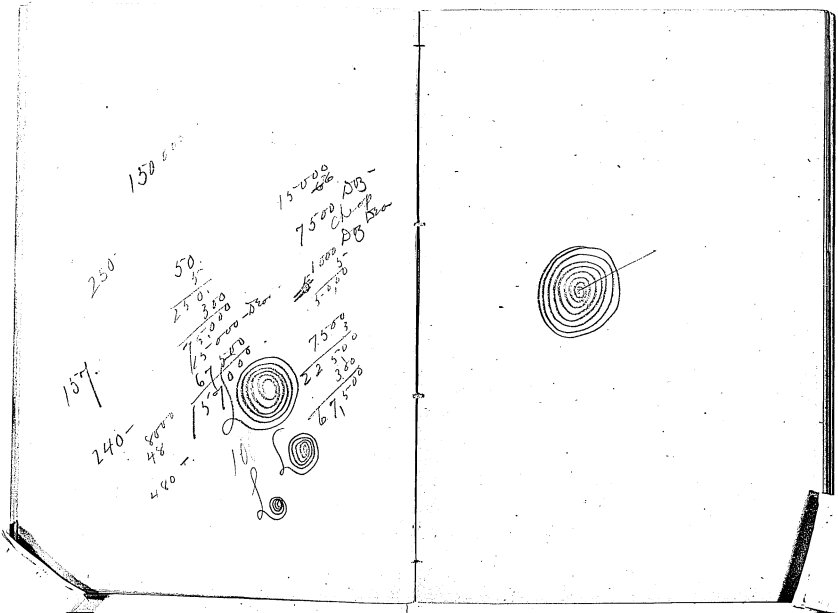









70 tiles at 36
2100
3000
5100
3400
1700
36 x 200
35
30
3450
450
200 x 36
20
120
36
47 2
540
50
27000
16
200
3200
120
45 00
6000
4800
5400
30
472
32
944
416
15104
8000
23100
20000
3100
6400
47
3000
7500
10000
36
200
7200
7
Joists
40
2000
8000
16
400
6400
60 windows



Topman Giant. 300
Roll man ~~stockkeeperman~~ 300
Carman 300
~~Inside Smoke~~ Roll man — 300
2 barmen + oilmen — 750
Foreman 600
Order Roll End — 300
Driver man 400
~~Spot Boss~~
1 shoveller 300

mem Engineers
2 firemen — 800

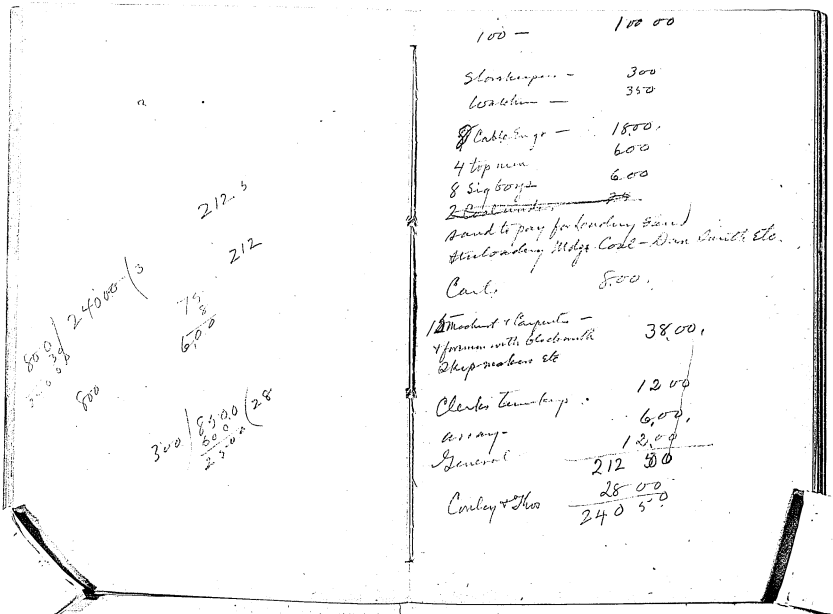
1 Chief 700
2 Trench — 600
2 Bay mc — 600
2 drill mc — 300
2 Portmen — 350

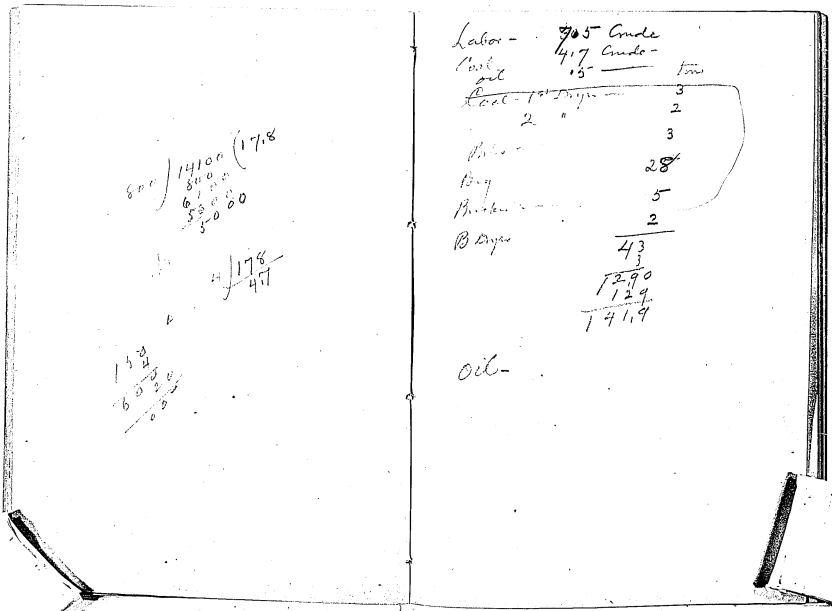
Mill 2
6 men — 900
Foreman — 500

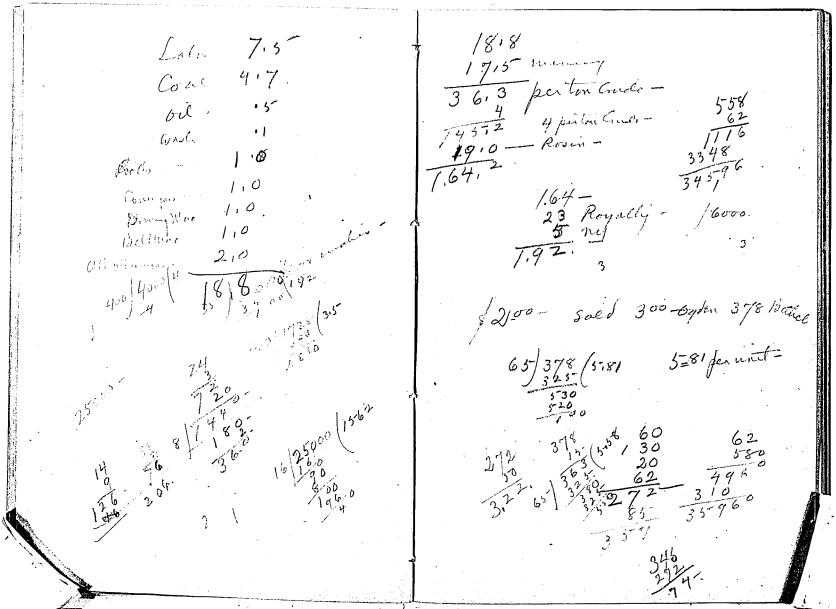
Pitchers 750
5 men — 300
7 Chem — 500
1 Eng + fireman

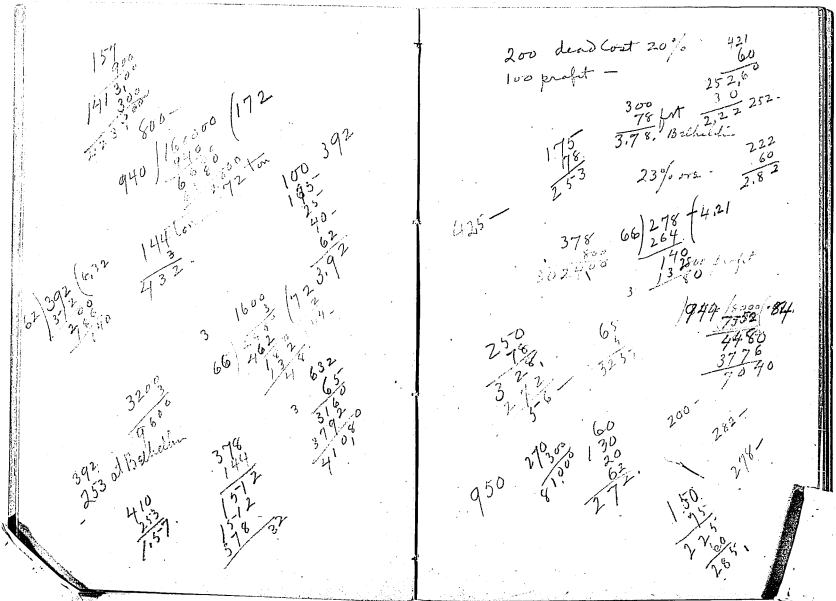
100,150

$100.


100 — 100 00
Steamer — 300
Locomotive — 350
Cable Engr — 1800.
4 tip men 600
8 Sig boys 600
Board to pay for locating Track
Blacksmiths, Mdse Coke — Iron Spikes etc.
Carl. 800.
1 Machinist + Carpenter — 3800.
+ foreman with Blacksmith
Shop-workers etc
Clerks Teamsters 1200
Assay- 600.
General 1200
212 50
Curley + Thos 28 00
240 50
212.5
212
80.0 / 24000 / 3
75
60.00
800
300 / 84000 / 28
600
2400


Labor - 705 Crude
Coal 417 Crude -
Coal 19 - ton
Road - 1st Days - 3
2 " 2
3
28
5
2
43
1290
129
1419
Oil -
17.8
1776
417



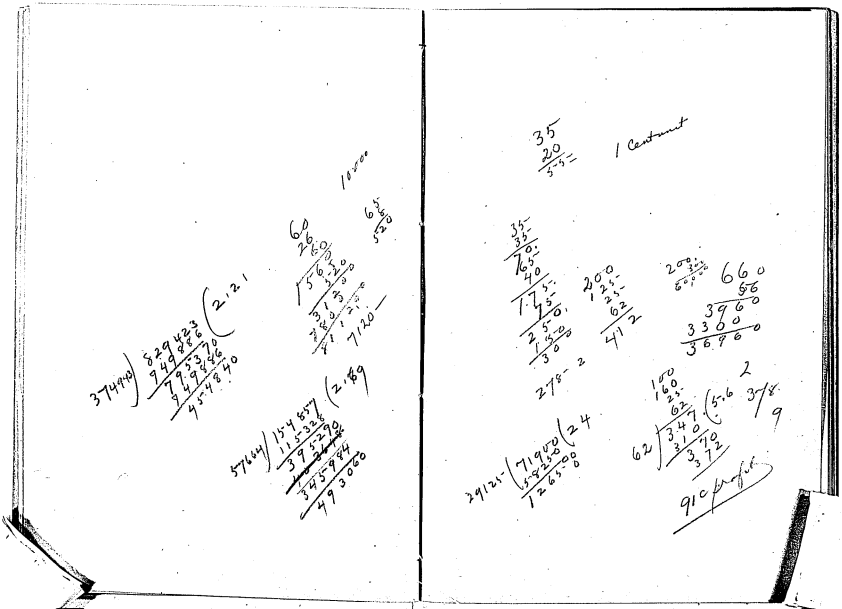

200 dead Cost 20%
100 profit —
392 253 at Bethlehem

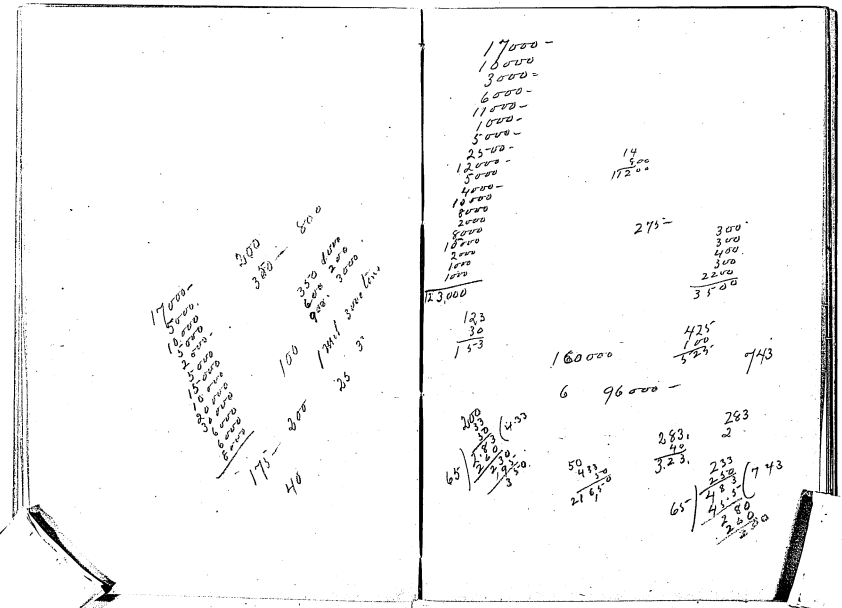
800 - Monthly

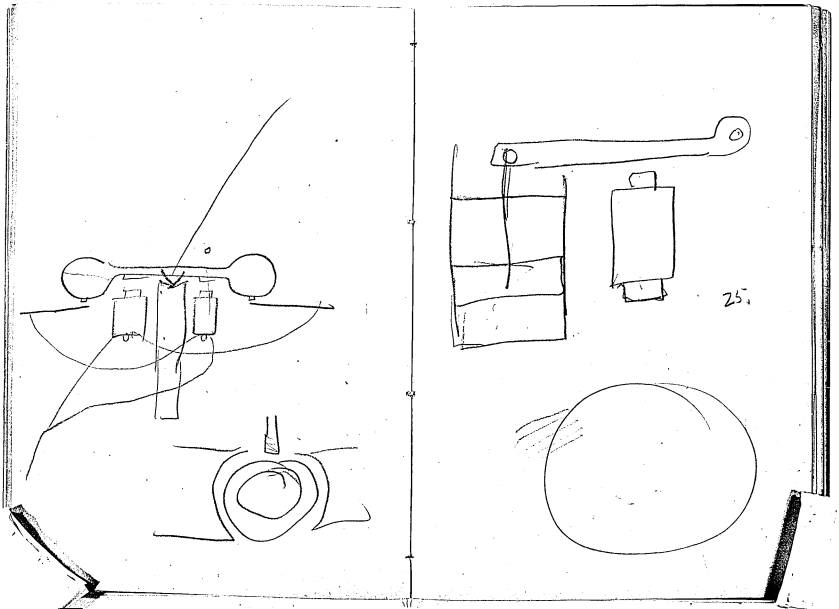
$$\begin{array}{r} 320 \\ \times\ 25 \\ \hline 40 \\ 640 \\ \hline 8000 \end{array}$$

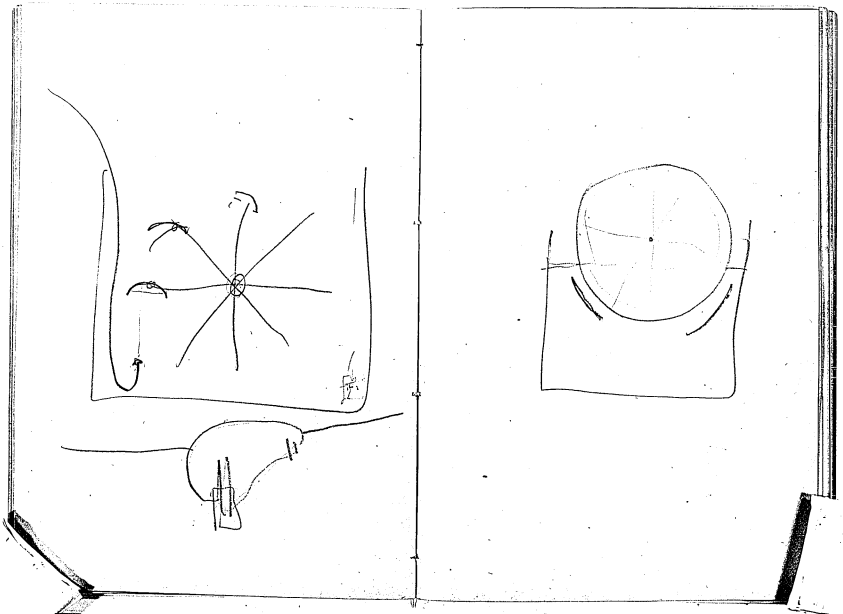
$$\begin{array}{r} 35 \\ \times\ 12 \\ \hline 70 \\ 350 \\ \hline 420 \end{array}$$

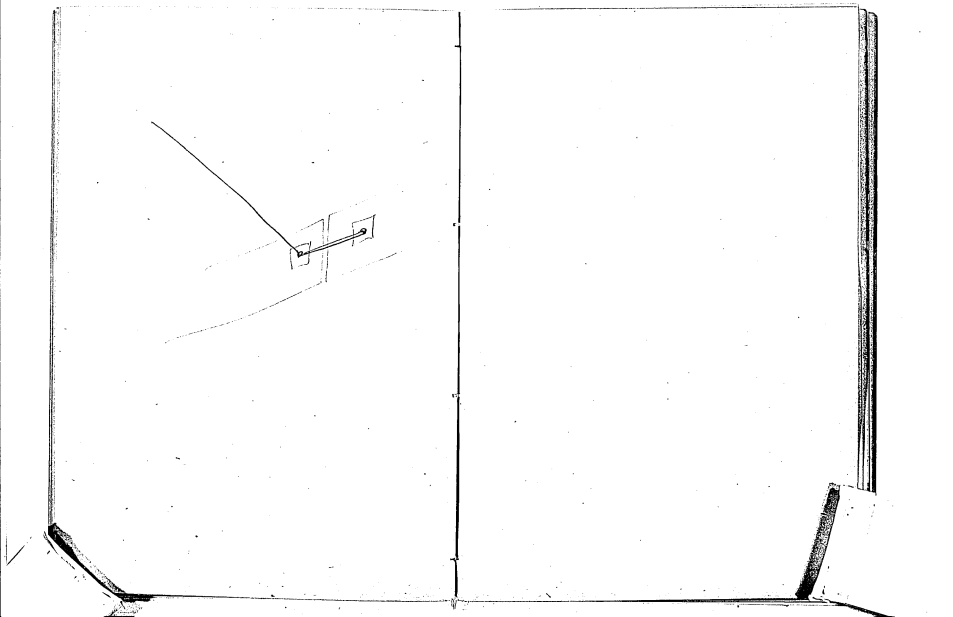
$8400 - 4200 = 4200$ Ans

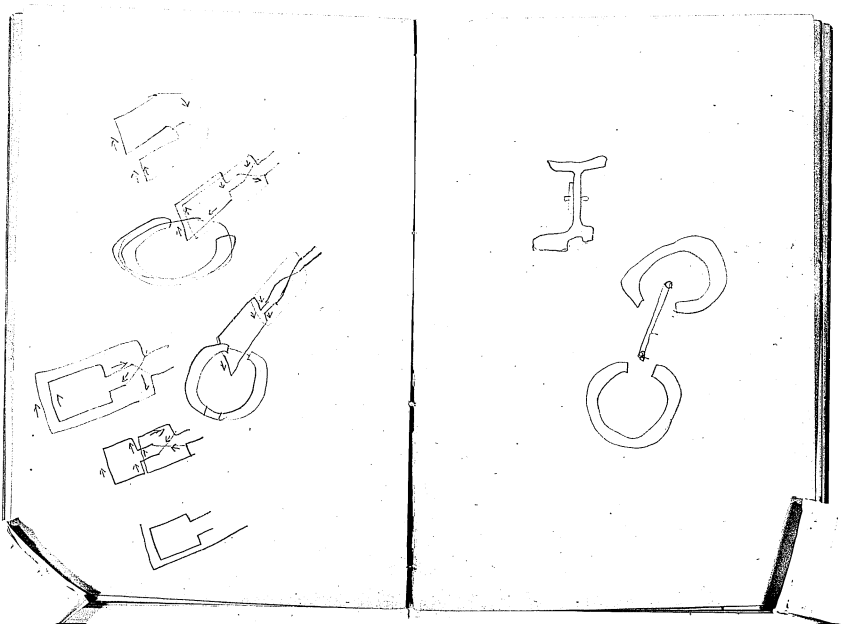


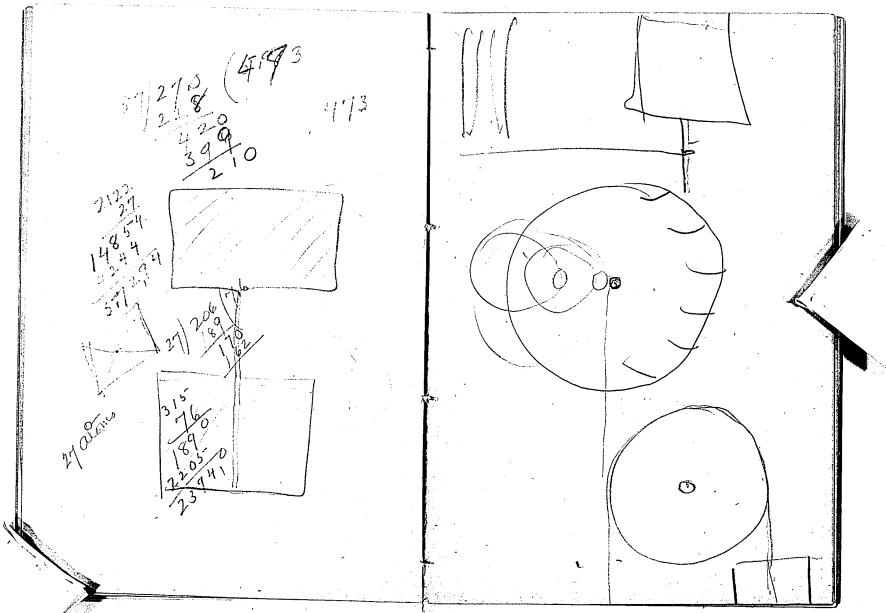


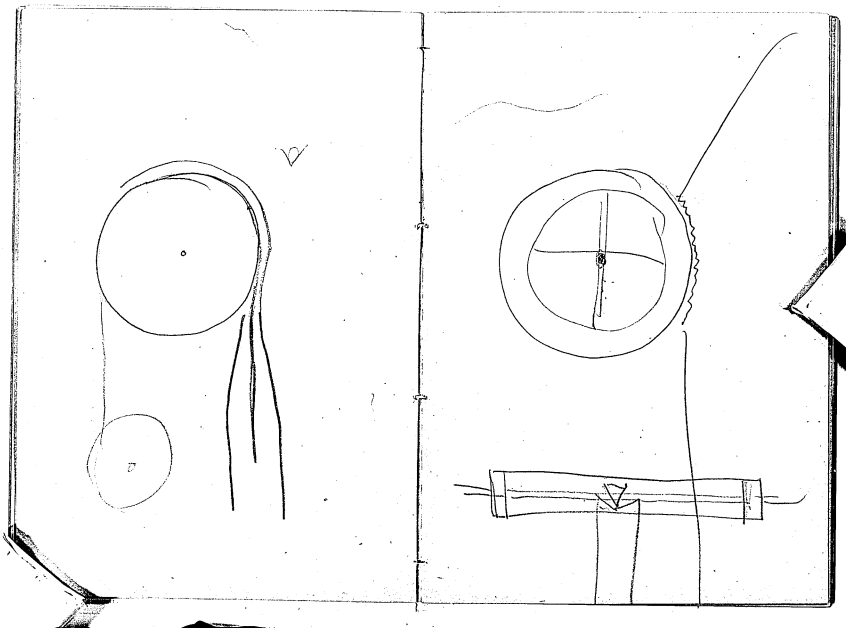

25.








4173
4173
24 chairs



**Notebook, N-88-03-15.2**

This notebook covers the period March 1888-March 1889. There is also one entry for October 1889. All entries are by Edison. At the beginning of the book are notes regarding the production of aluminum by electrolysis. Most of the book contains drawings and draft patent caveats for the phonograph and for squirted lamp filaments. There are also calculations for an ore milling operation. The book contains 238 numbered pages and has been used in both directions. Several pages were removed from the front of the book before it was paginated.

Filming order: 1-159, 181-160, 188-238.

Blank pages not filmed: 102-109, 162-163, 182-187, 222-223, 232-233.

N-88-03-15.2

XE-5286



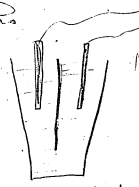
Notes on Experiments for production of Aluminum

March 15 1888.

TCE

Try Bunsens Electrolytic
process - Watts Dic Vol I
page 152 - also see full
paper in Poggendorf Annalen
XCII. 648 Use the Electric
Light Carbon - If you succeed
in getting the results, then
go up & make a quantitative
Experiment to determine how
much material & Current
is used under the best
Condition per gramme
of aluminium - Try platinum
as well as Carbon Electrodes

instead of a porous partition use a new porous partition & leave an opening at the bottom for the Current to pass thro




You will have to fit it in the sides of the Crucible.

---

Try also fused Carbonate Soda - Carbon electrodes & then when liquid add Chlorides of Alumina Current Current as Oxygen will be Eliminated at the Carbon

Space —

Vary this Experiment by using

~~Quantity of Elimination of Oxygen~~

~~and to a Carbon pole~~

~~also Vary of Experiment~~

The following series of Electrodes

Electrodes on which Oxygen is liberated

Iron
Nickel
Copper
Zinc
Silver
Cast Iron
Carbon
platinum
Brass
Cadmium

Electrodes on which the Base is liberated —

platinum
Iron
Nickel
Copper
Zinc
Silver
Cast iron
Carbon
platinum
Brass
Cadmium

Change these about in various ways —

Use the following solutions -

Chloride of Aluminium alone

Double Chloride of Aluminium & Sodium

Cryolite

Sulphide of Aluminium alone

Sulphate of Aluminium and Carbonate of Sodium in various proportions.

Sulphide of Soda & Chloride of Aluminium Various proportions

Sulphide of Soda & Sulphate of Aluminium

Sulphide of Soda - Acetate of Aluminia -

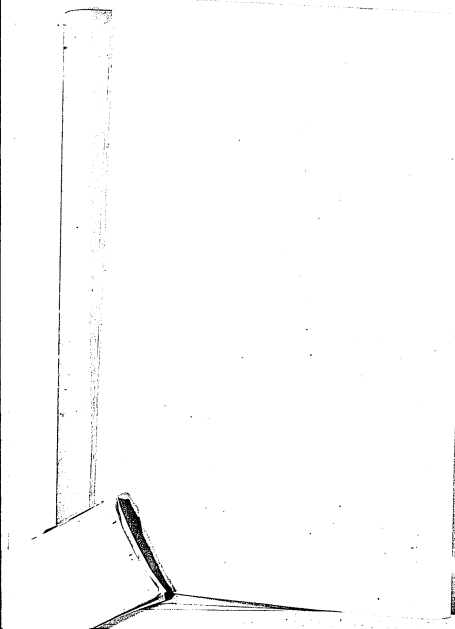
Sulphide of Sodium +
Carbonate of Aluminium

Chloride Sodium Carbonate
Sulphide Soda + Chloride of
Aluminium -

Caustic Soda + Chloride
Aluminium

Borax and Cyanide of
Aluminium -

Note - put pure Chloride Aluminum
anhydrous in side tube of lamp
32 cp + get vac heat aluminum Chloride
which when pure boils at 180°
+ volatilizes at low temperature
then heat filament - Ikes will
probably not work - Their substitute
and now work - The Chlorine will
combine with this + if vacuum
kept high + action go on slowly



aluminum nitral phosphate 6.13
deposited on the 4th Feb —

Statutum Carbonum

Carbonate soda & the
double Chloride of
Aluminum & Sodium

Common Alum (12)
Potassium & Aluminum

Chrome alum

ammonia Alum

Chrome alum & Carbonate
Soda —

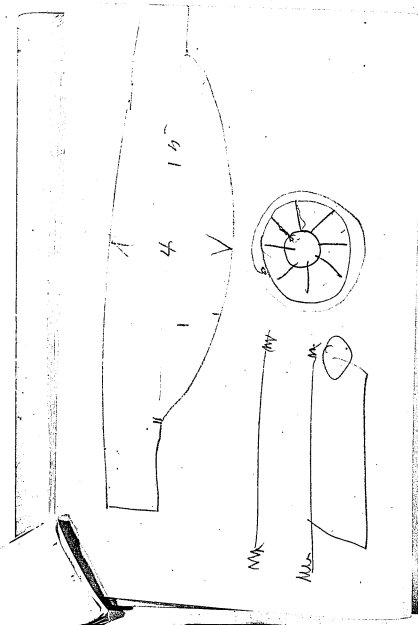
Ammonia Alum &
Carbonate Soda

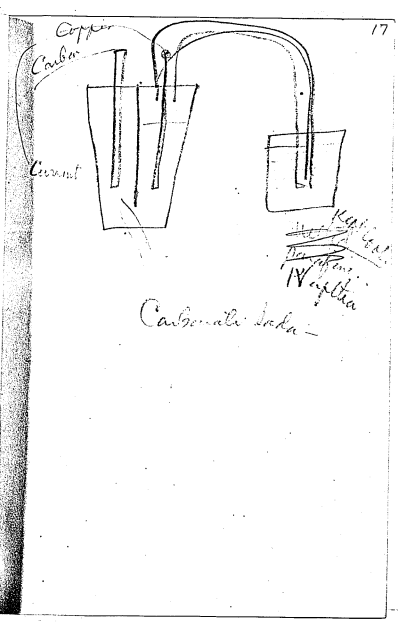
Palassium Alum & Carbonate Soda —

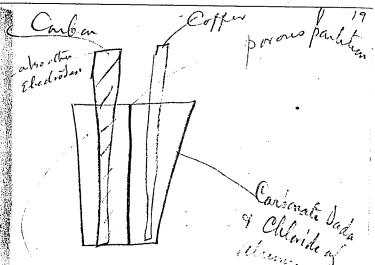
Note = See Joules method of Electrolytic preparation of Aluminum — Chem Gaz 1850 339 — perhaps found in Joules papers a book recently issued now in Library

Acetate Soda & — & Chloride Aluminum —

Chloride Aluminum 25 pct of its weight of Lampblack & Carbonate Soda —

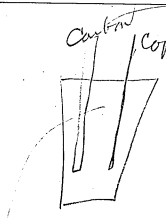



Copper
Carbon
Current
17
Carbonate soda




Carbonate Soda —
perhaps this will work very well for the partitions —

9m Electric Lamp 32 cp —
Bisulphide anhydrous
Chloride Aluminum + asphalt
pitch or Naphthalin, or heating
Chloride Aluminum + Naphthalin
Volatilized — heated filament
decomposes the Chl Aluminum
+ Chlorine Combines with
~~C~~ Hydrogen to form HCl —




Use - anhydrous Chloride Alumina, 30 pct - 70 pct Carbonate Soda - fuse to red heat the Soda + then add the Chloride -

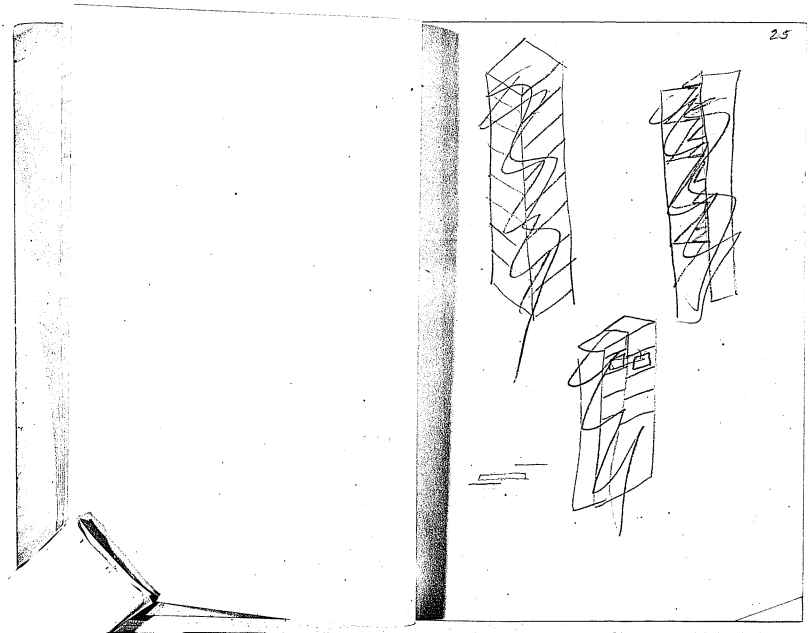
---

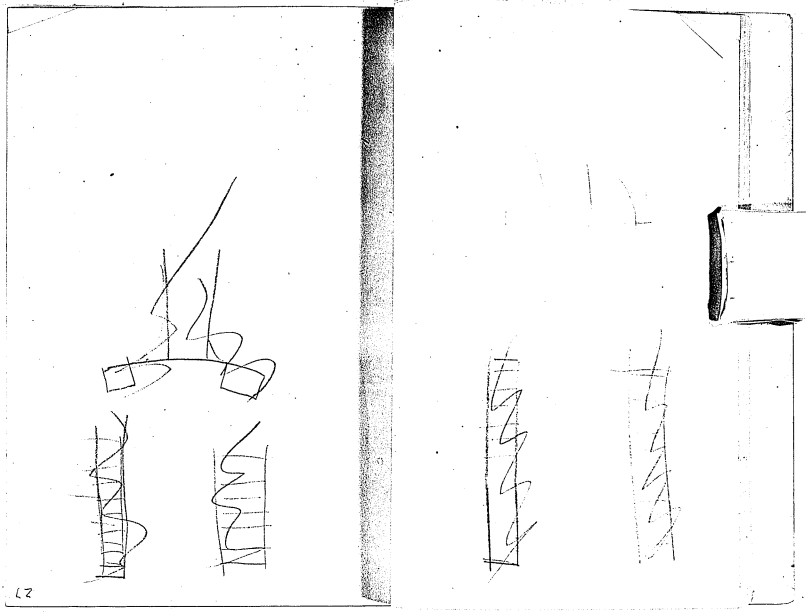
also use Chloride Aluminum + Carbonate potash

also use Double Chloride of Aluminum + Soda with ~~of Aluminum + Soda~~ potash

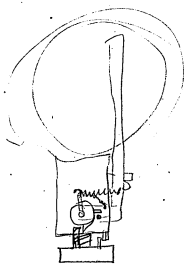
also double chloride of Al & K with excellent carbon

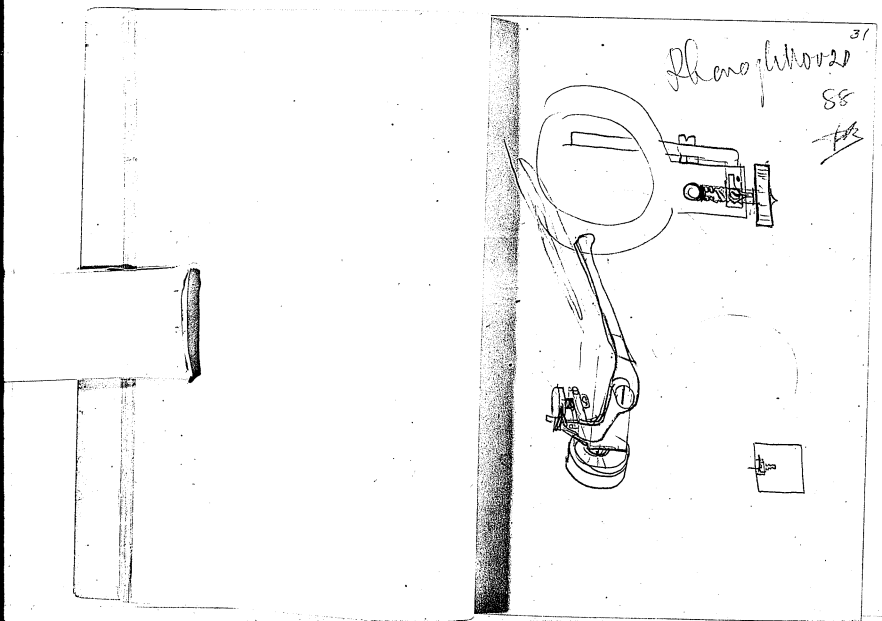
Look for deposit aluminum
on cotton or balloon
Crucible — ~~tie wire~~ ~~in case~~
~~this~~ use as low a heat
as possible —

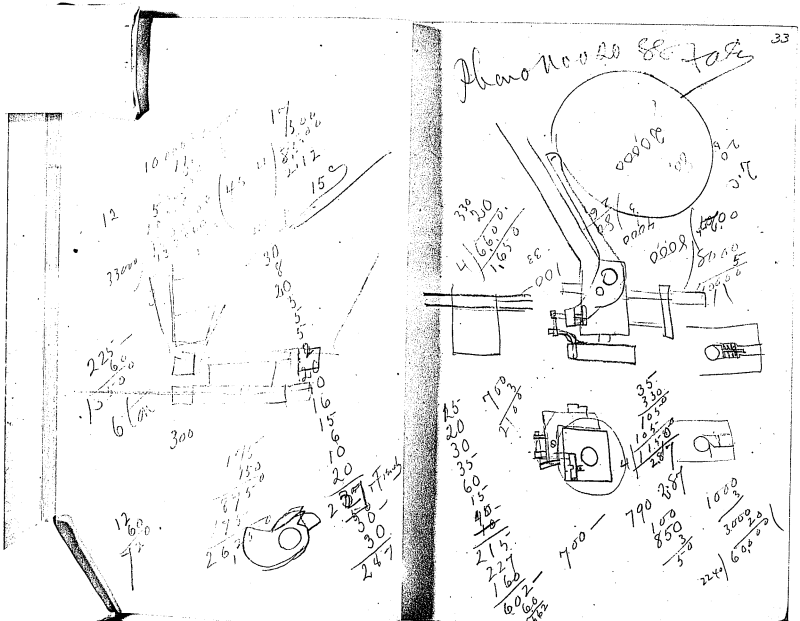


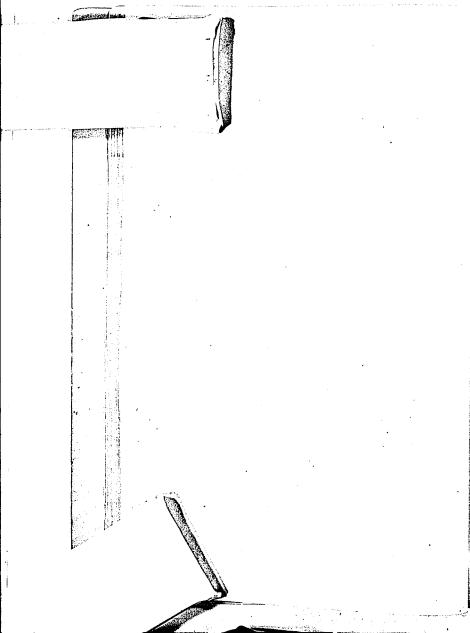


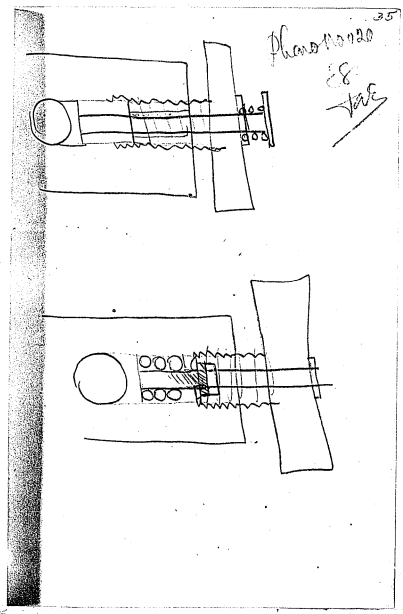
Phmgh Nov 20 85





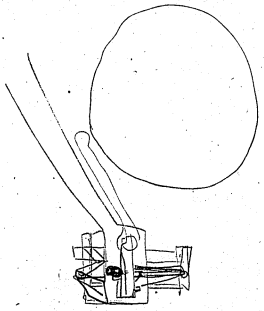


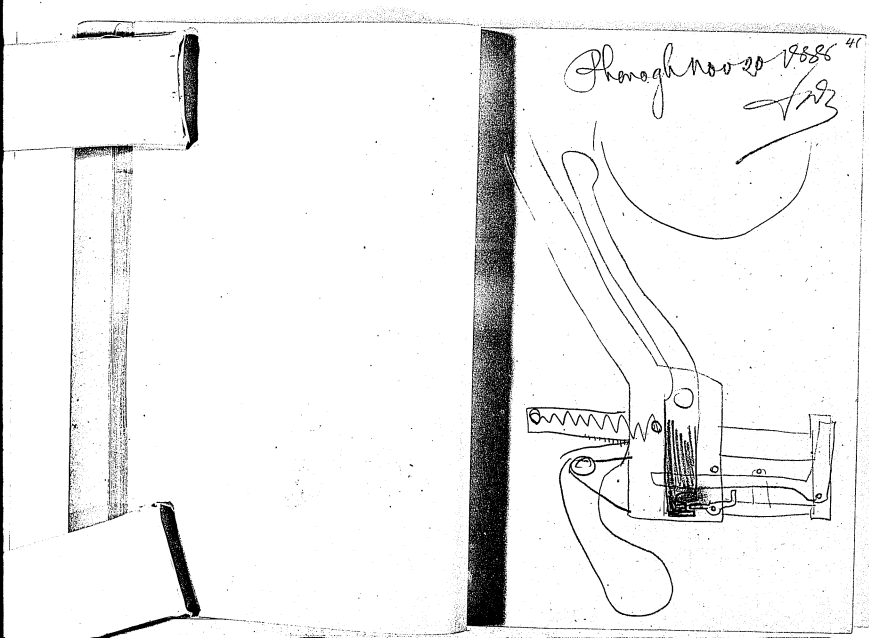


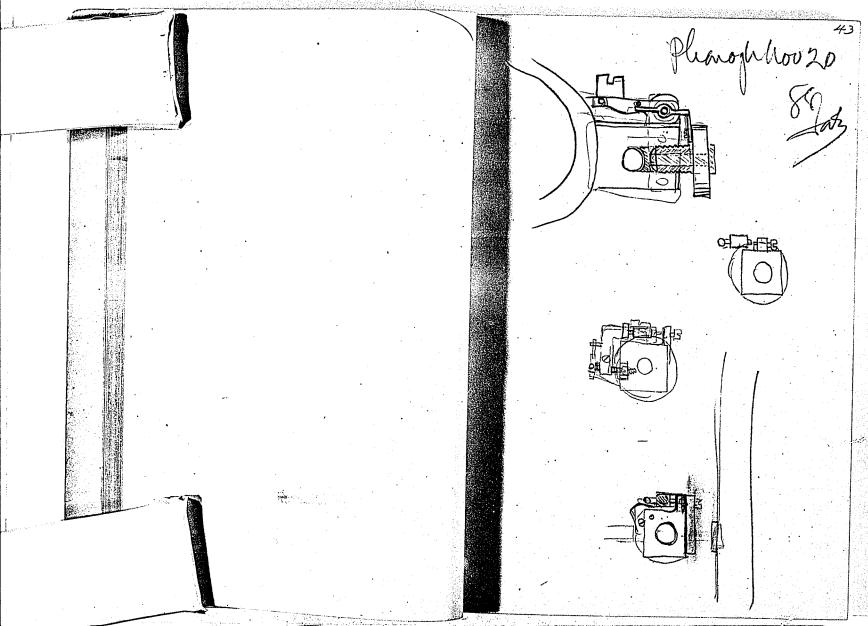

35
Plasmazo
de
Vaso

Photograph nov 20-88

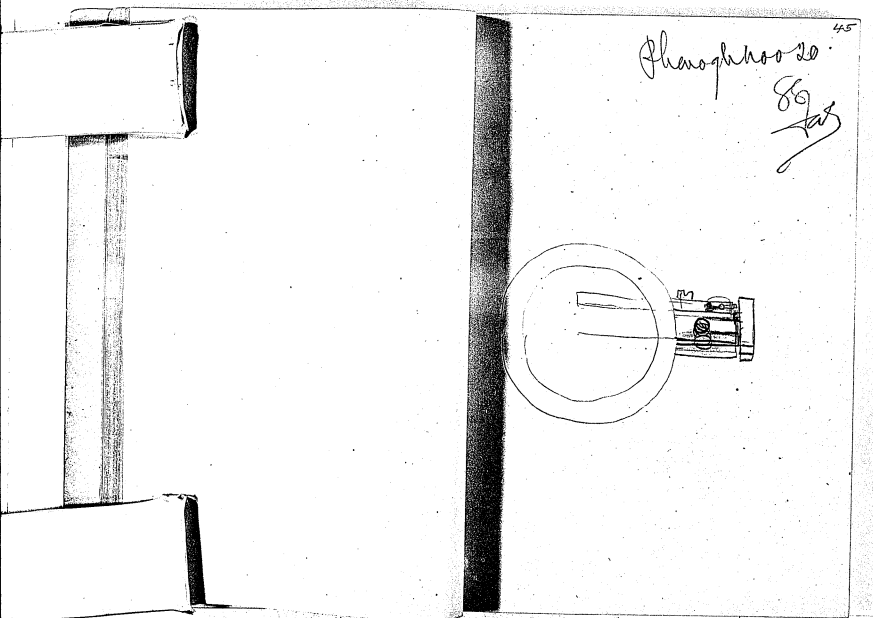
Photograph 20 SR

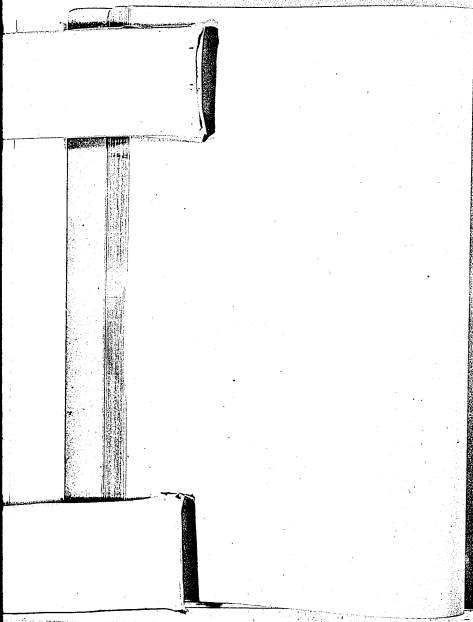


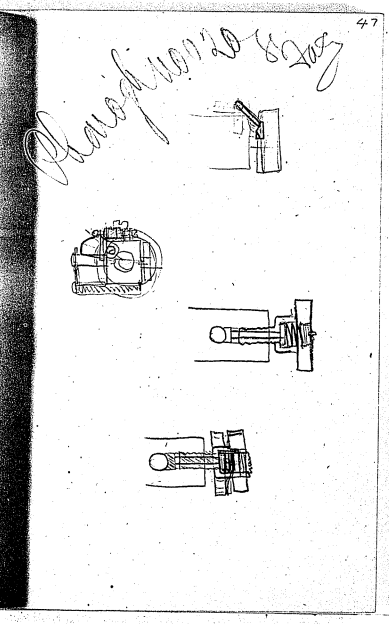



planoptikon 20

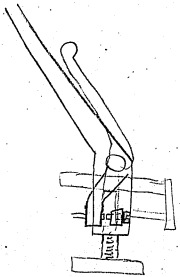
Phanophoro 20.

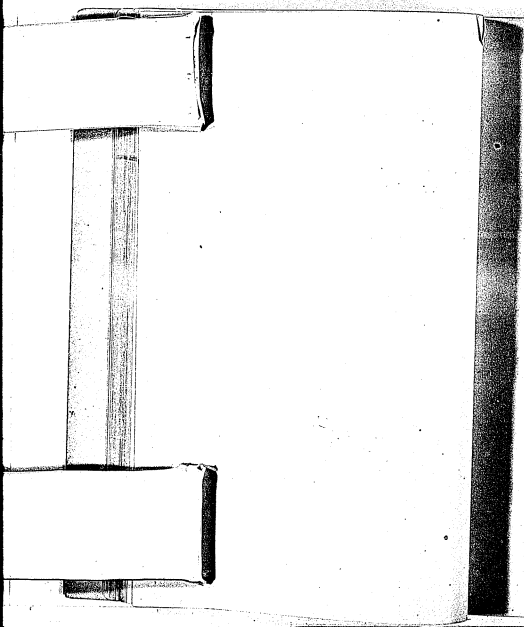


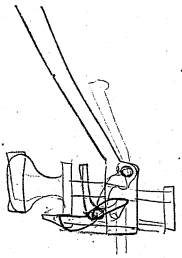


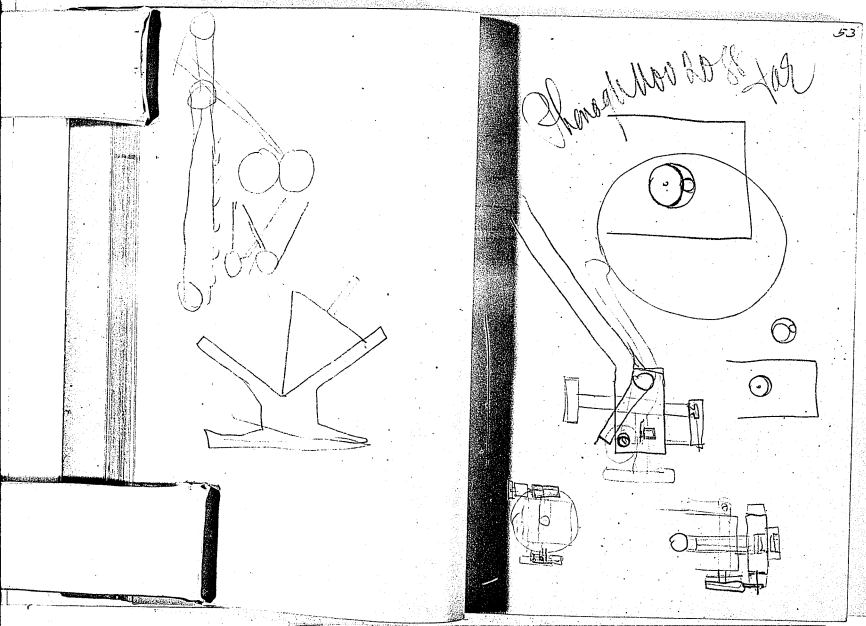


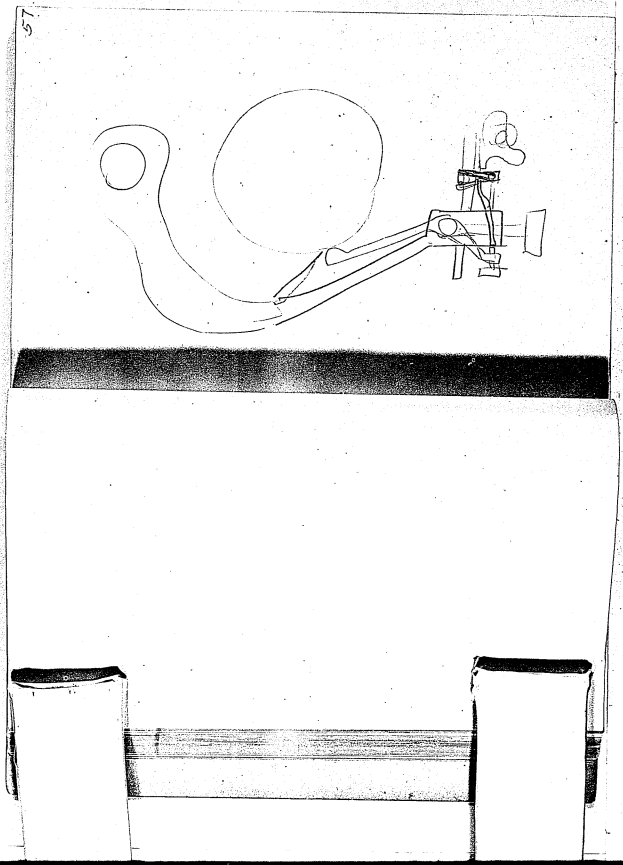
Transfixion &c

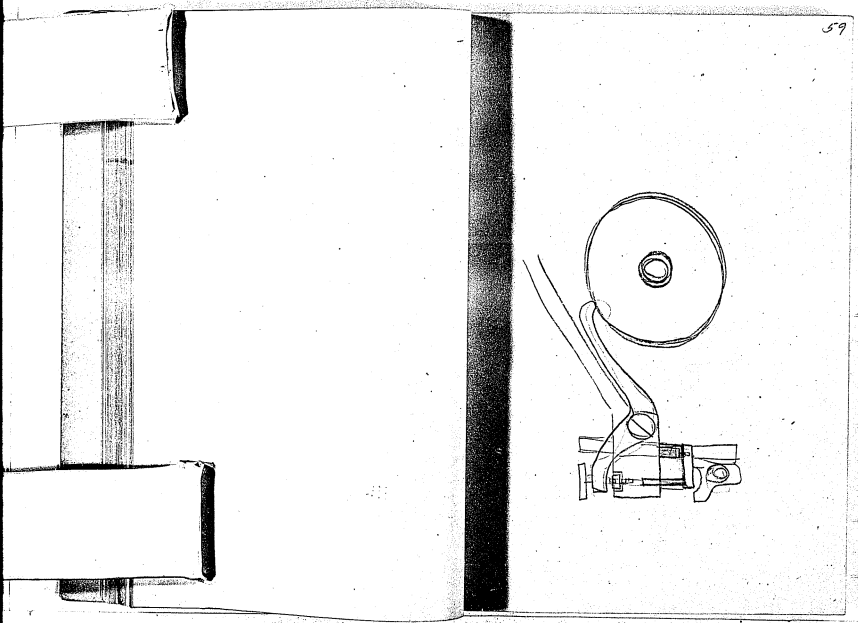


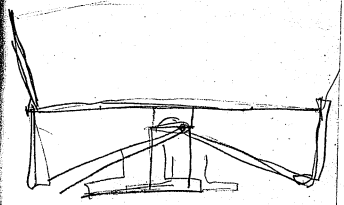




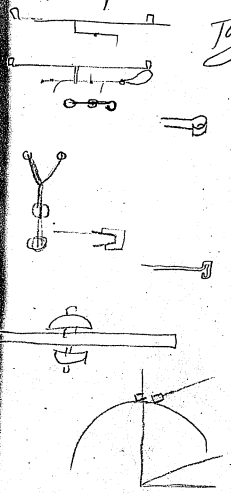


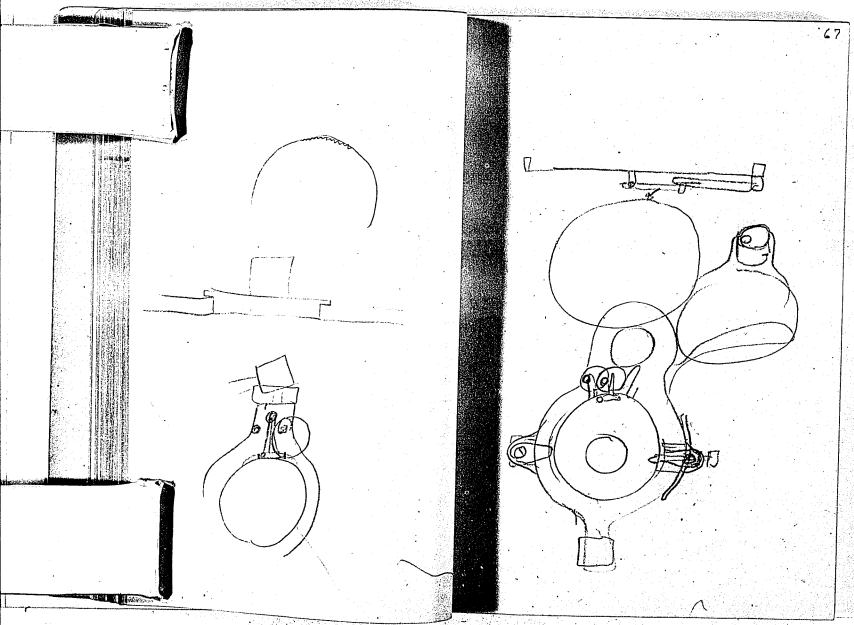


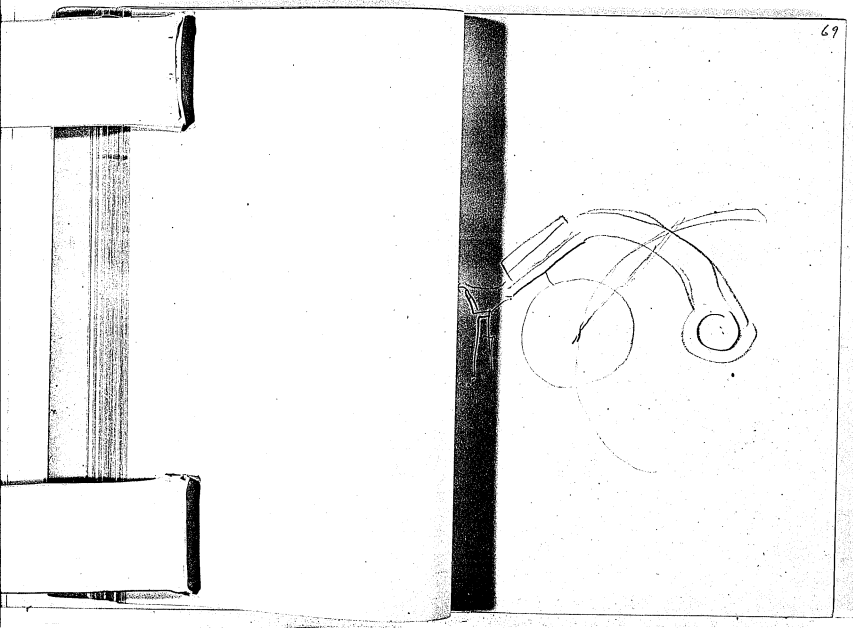


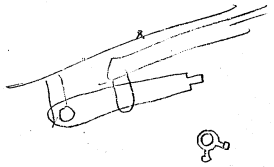


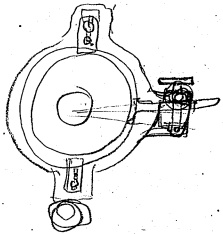
Plough Oct 10 89

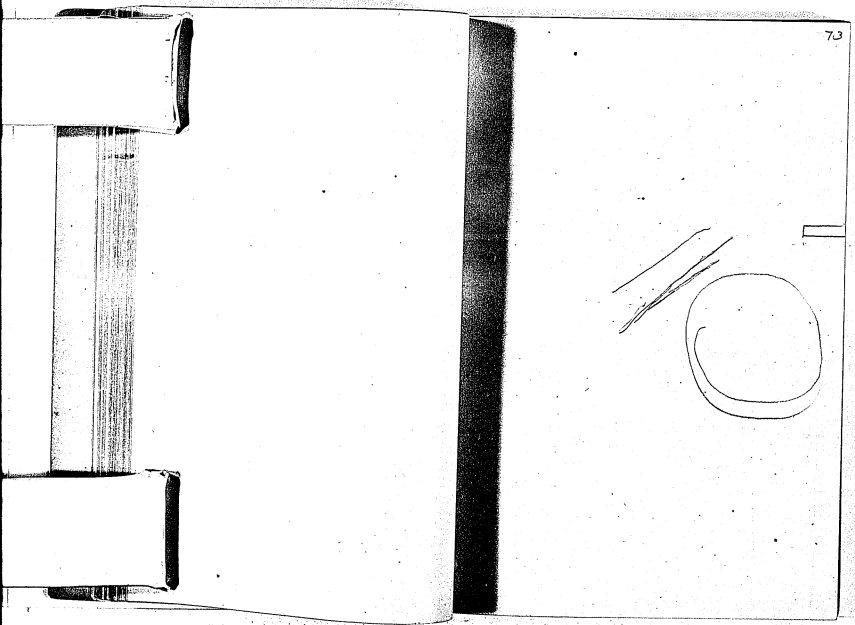








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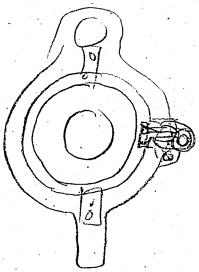
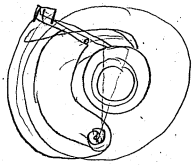
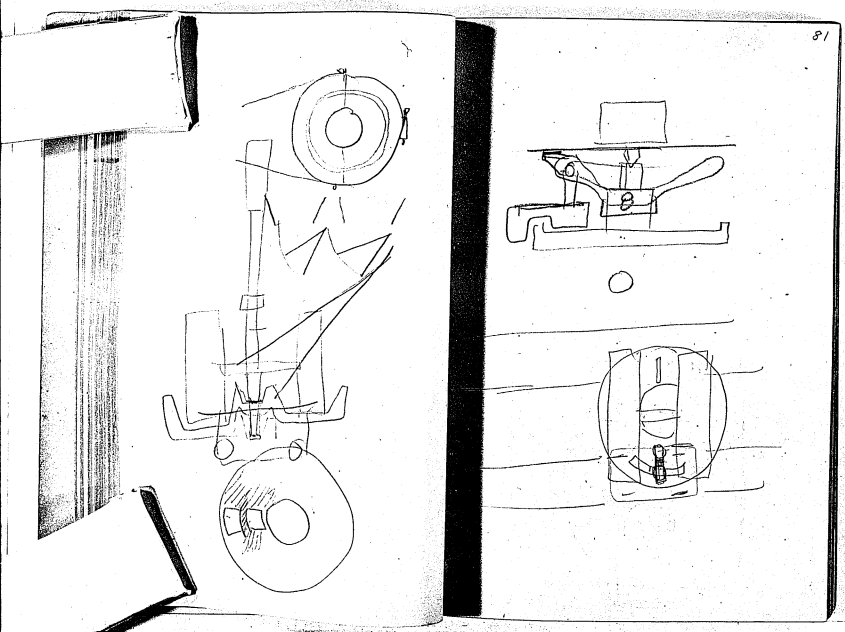
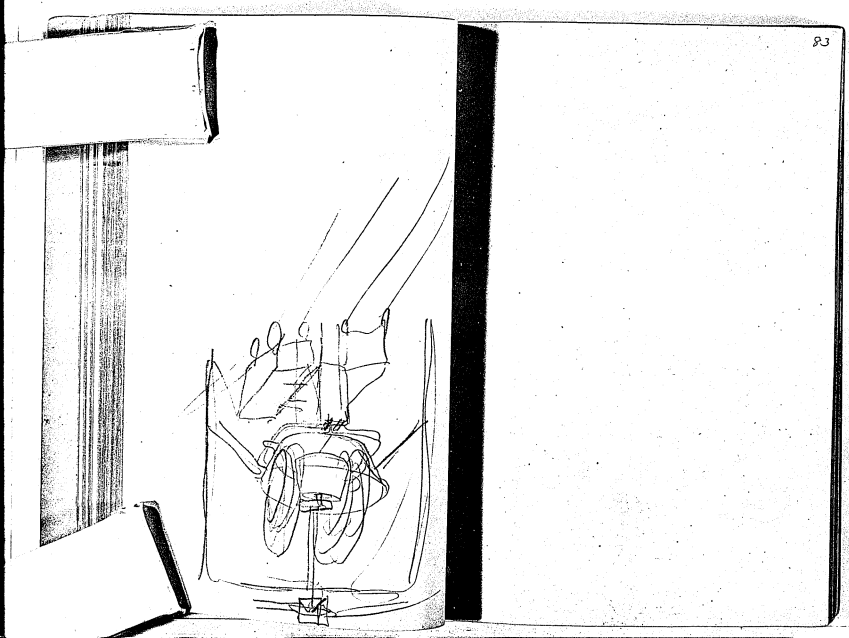


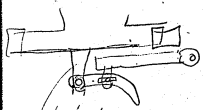


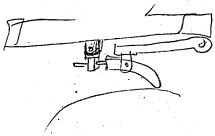


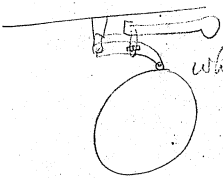


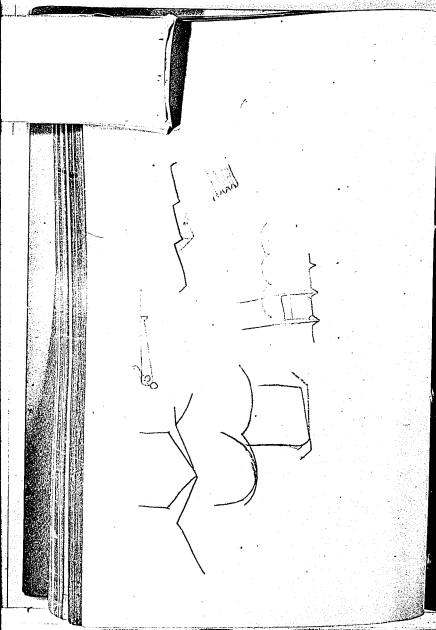

85
Lorenzo
Lorenzo

Phonograph Caveat – E.D.
March 16 1889





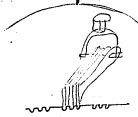


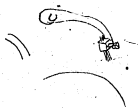


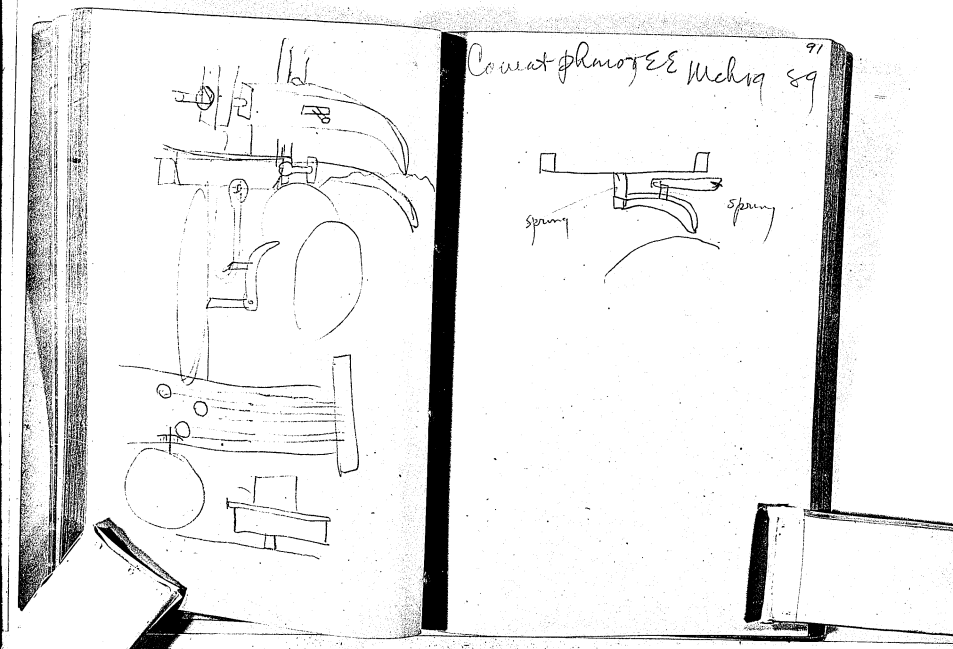
Crucent, Thurs + Fri March 17 1889

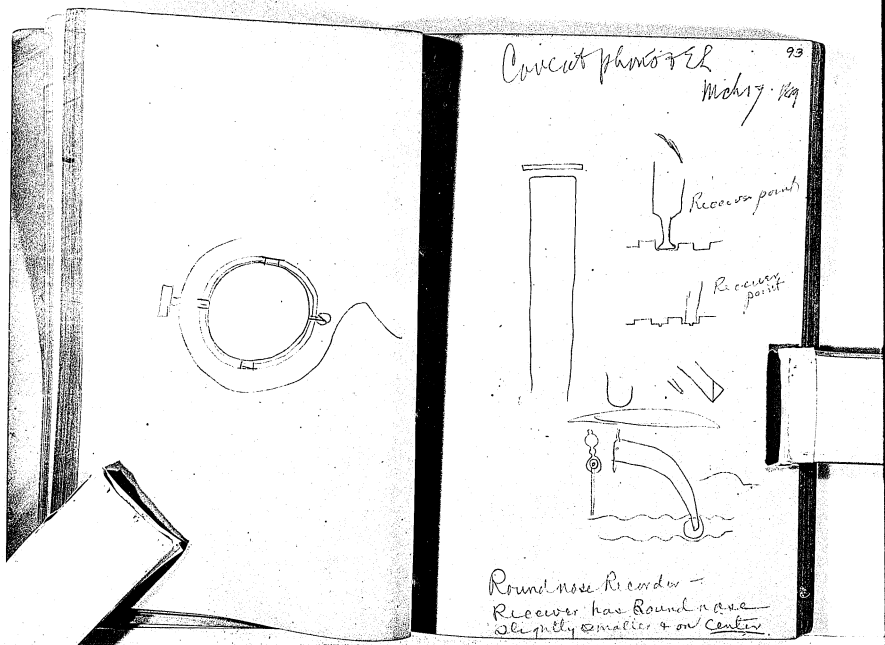
89

Asphaltic felt various processes in use Canton worth flooring heat also roofing

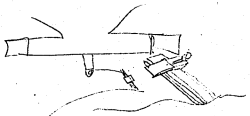



Concept phone EE Mech 89
91
spring
spring


Circuit phantom
Michig. Reg
93
Receiver point
Receiver position
Round nose Recorder —
Receiver has Round nose
slightly smaller & on Centre

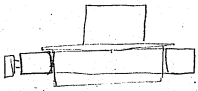
Concentrated Ink
March 17 1859

95

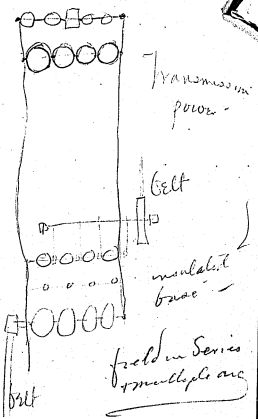


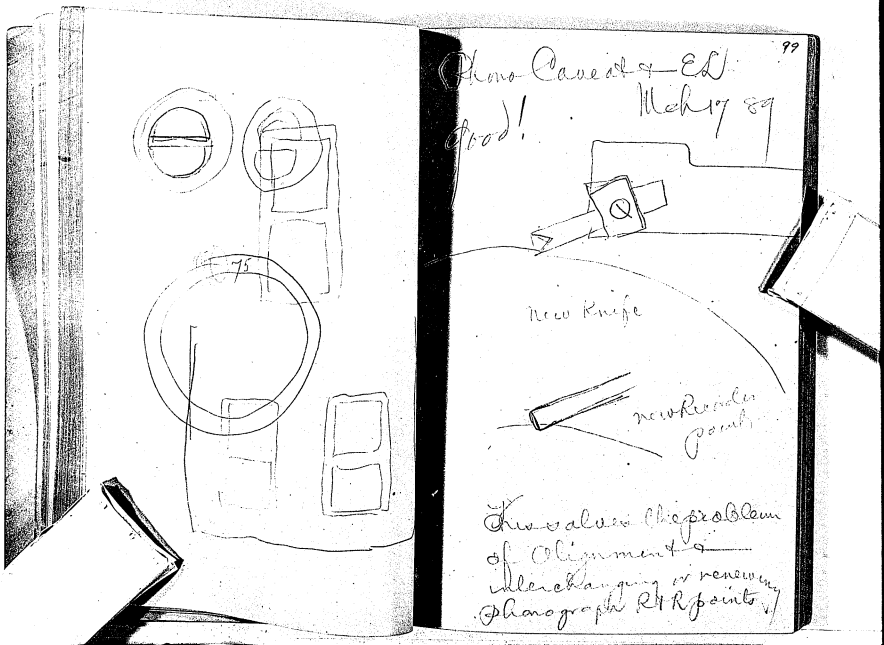
flexible Ribbons brush receives paints —

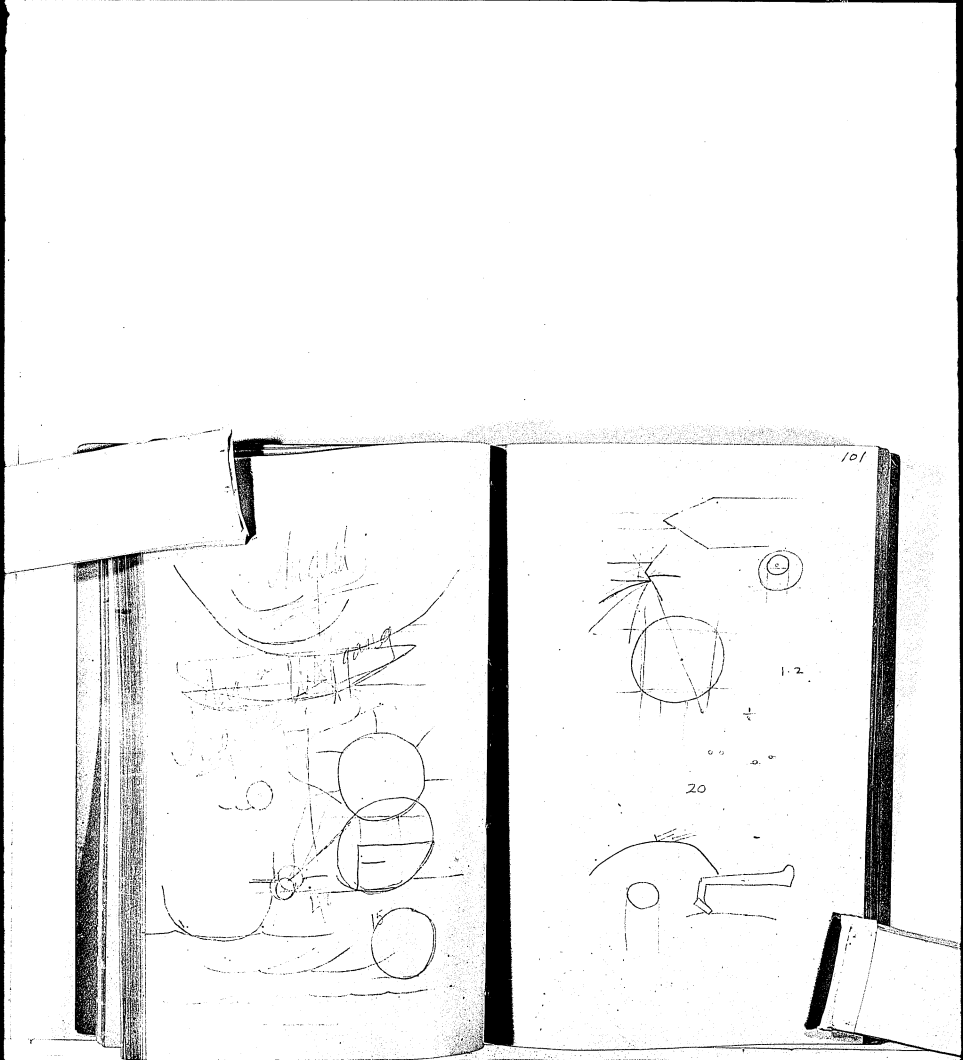
Lead or tin print.

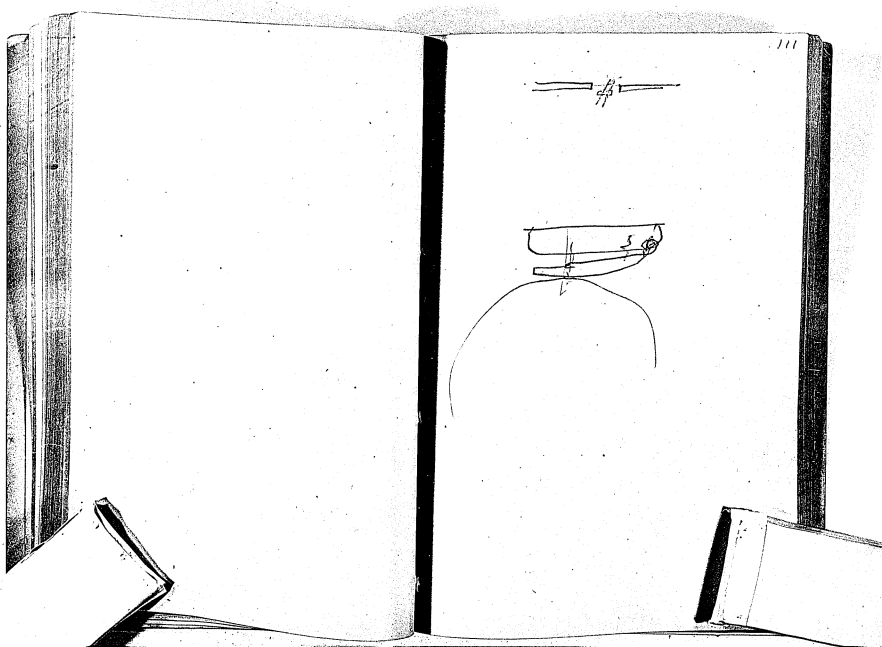


Thurs Eve Concert Mech 17/87




99
Kino Caveat — ED
Mch 17 89
Good!
New Knife
New Rivalen Combs
Rivalen chief problem
of Alignment
Mechanism or renewing
Phonograph RH R points


101
1.2
20



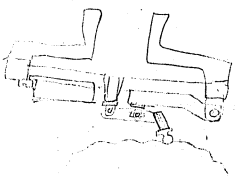
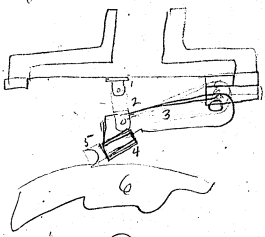


fig 1



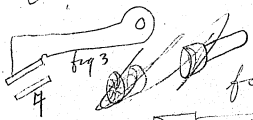




fig 3

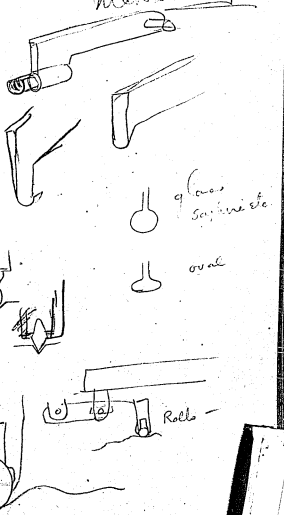
fig 2

The object of the invention is to produce a simple and effective recording and reproducing [illegible] phonograph which may be adjusted or removed by unskilled persons and the production of a record differing in respects to the original record so made by phonograph as to be capable of absolute reproduction of the original sound with all its characteristics under advantageous conditions as to enjoyment or unobjectionableness of the operation

The inscription consists
primarily of the recording
the wounds circularly instead
of square. 2nd. The reproduction
of them on drawings by
a tracing point also circular
instead. Thus rendering
impossible the perfect
alignment as to the point &
tracing point and record
mathematical as well as other
forms of wound record
3rd the use of a circular or
concentric recording
tool, and of a circular or
concentric reproducing
tool for following the
record

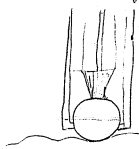
fig 1 Illustrates the
Recorder

Mahwah 1884

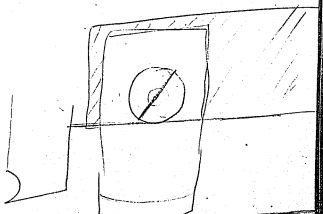


Thema Cam ES

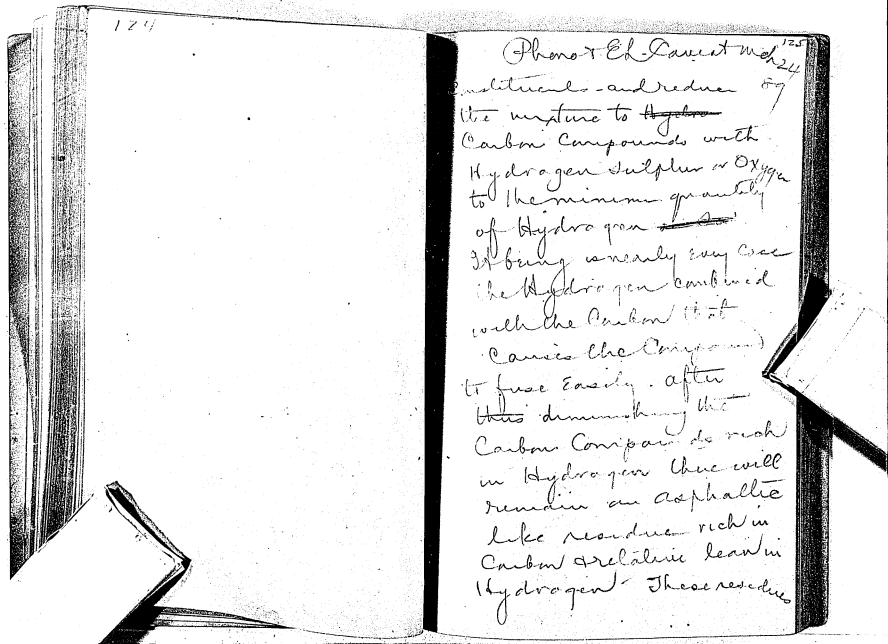
Mch 24 1859 JGS



Rolling Ball Ramp



pimento for carbonizing through a
die like Macaroni cutter
made very perfect with proper
material. I employ for this
asphaltic or Bituminous material
Either natural or produced
artificially as in the
decomposition of Organic
Carbonaceous matter
Salts or Compounds of Chromium
or heat to produce tiny subdivisions
the Various Asphaltic bituminous
materials if containing too
much Volatile matter
into such as sulphuretted
or Hydrocarbons containing
a relative large amount
of Hydrogen should be
heated for several hours
in a and both to
drive off as far as
practicable the Volatile





Phenol Ethyl Carbinol Methyl
Constituents and reduce by
the mixture to Hydro-
Carbon Compounds with
Hydrogen Sulphur or Oxygen
to the minimum quantity
of Hydrogen being in nearly every case
the Hydrogen combined
with the Carbon that
carries the Compound
to fuse easily. after
this diminishing the
Carbon Compounds rich
in Hydrogen there will
remain an Asphaltic
like residue rich in
Carbon & relatively lean in
Hydrogen. These residues

Phenoglu E.L. Law March 24 89

are known to Chemists
as commence as pitch
~~Bitu~~ The pitches produced
naturally as known as
Asphalts, Bitumens &c
These bodies can be
separated into
fulmments for Carbonization
but cannot be Carbonized
directly owing to their
insolubility — Torrender
them infusible &c while
in the act of Carbonization
it is essential to still
further dehydrogenize
(1) To take out some of the
Combined Hydrogen

Phmo-Cav Mch 24/89

to that point that the resultant is still a Compound of Hydrogen or Oxygen with Carbon & Capable of being dissolved by some solvent ~~but still if~~ when sufficient Hydrogen has been removed. The finest Carbons are driven out of the Compound by heat leaving the filament pure charcoal Carbon without being distorted or swelled. If the Hydrogen has not been sufficiently removed the Material of the filament will be infusible & the gas due to decomposition

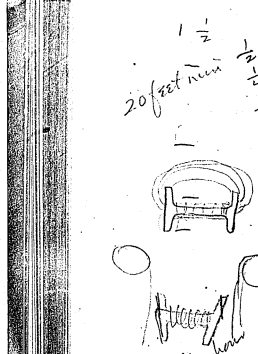
will act while Ex exposing Plimo Tellas mch 24 89
to puff the plastic portion
+ thus distort + ruin the
fulminet.
After the fulminet has been
formed from plastic Bitumen
then are acted upon by
Chemical reagents which
primarily tend to
displace some of the Hydrogen
from its combination with
the Carbon. Some of the
reagents not only displace
Hydrogen but enter into
Combination by a method
known to Chemists as
Substitution, others remove
no Hydrogen directly
but penetrate the mass

Phot. Ech. Journ. 1894 89

of the filament & become volatile by during Carbonization of the filament to displace the Hydrogen

If the filaments are placed in Kerosene oil containing say $\frac{1}{20}$ part of Chloride of Sulphur. The Chlorine of the Compound with Eliminate Hydrogen from the Bitumen probably some of the Sulphur may unite with Combination or remain mechanically in the pores — the latter may be removed by with Nitric acid after the ~~[illegible]~~

134



Phenol-Ethyl Cavernale 2/4/89

The filaments may thereby be Carbonized without distortion ~~about~~ they should remain in the Benzene bath 200 hours and in the nitric acid bath 5 pct nitric 95 water for 24 hours then in water for 96 hours other Reagents can be used Nitric acid 5 percent 95 water gradually increase the strength of the acid Each day for 10 days until 75 percent acid is the final acid. Pentachloride of Antimony dissolved in Chloride Ethyl acts similarly

136

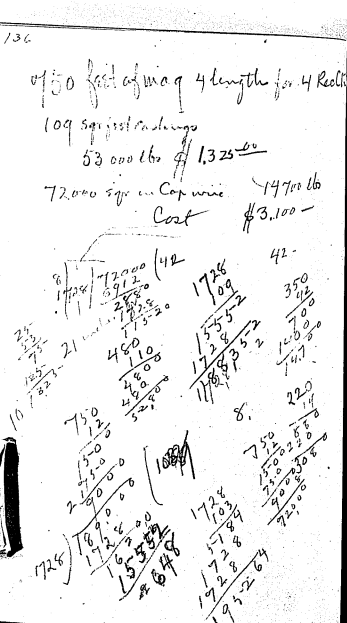
0150 feet of mag 4 length for 4 Reels

109 sq inst radiators

53 000 lbs @ 1.325 ~~00~~

72.000 sqr in Cap mine 14700 lbs

Cost $3.100 —



Phmor E&Chem Mch 24 89

to Chloride of Sulphur

Gut in this case. ~~Chloride~~ of Antimony is deposited within the pores & must be removed by Hydrochloric acid -

Chloride of Bromine

" " Iodine

Pentachloride Molybdenum

~~Chlorine~~ & other Carriers of Chlorine or Bromine which should be used of proper Solvents act to displace Hydrogen Sulphur also act to displace Hydrogen with act of Carbonation the heat causes the Sulphur to abstract

1325
3,100
750 – Rollfeed & Boxes
100 Dividing board
300 Shutter &c
5 5-75.

30 hp required

Blowing Apparatus.

1050 –

Water apparatus 1000

Total 3,575

180 hp saved
3
540
1080 oil cost daily saved

Phens & El Cav Mch 24 69

Hydrogen.

Hydrogen may be displaced from the Combination with Carbon by the use of Oxidizing agents like nitric acid as before discussed Sodic acid but in oxidizing the Oxide a great Care should be taken that it will not oxidize the Carbon itself as for instance with Hypochlorous acid

~~Asphaltum~~ Of nearly all ~~Carbon~~ natural Bitumens Contain ash it is best to purify the pitchy substances by

5000 m bolts saved,
500 m fixing up -
5500 -
3000 - m Mng Eng
8,500. Saved -

Showing saving by Iron Mng
+ gain of 67@6¾ or
·008 of this reducing to 30
& Recirculating pump then,
68@69 + 30 Tons 25 -

Phonotch Law Mch 24 89

dissolving all that can be dissolved by Chloroform as this solvent is the best solvent for the ~~most~~ Compounds richest in Carbon by thinning the solution & filtering most of the rock is caught by the filtering paper. The solvent is then Evaporated off or better distilled off leaving it of the same Consistency as before & then mixed with Bath bringing it to the right Consistency for the

| | |
|---|---|
| Magneticum | 30 |
| Imperct. | 12. |
| Pattern — | 8 |
| 2 Cloves belt | 7 |
| Cross belts — | 2 |
| 5lb Hubbell. | 5 |
| Big stick — | 10 |
| Rattle head | 8 |
| Falls — | 12 |
| Stamps | 50 |
| Mantle | 5 |
| Head Belt | 5 |
| Cleaning — | 5 |
| | 156 |

10
15
10
20
8
7
5
15
5
5
40
5
5
15
30
70

1500

65

160
36
3
5 480
1440
60
1440
4
1700
2000 between

2240

Thos & Ed Laurat mch 24 89

Painting press.

Weather

Weather process is to actualize

Bituminous by Nitric acid & other oxidizing agent Hydrocarbon until Enough Hydrocarbon has been removed to render them infusable then dissolving the Compound in a proper solvent filtering to remove ash & Evaporate Solvent down to a point where there is ready for painting the bituminous will dry hard & may be cut to shape of a loop etc

144

16" 3 / 1.500 - .450 tons

24

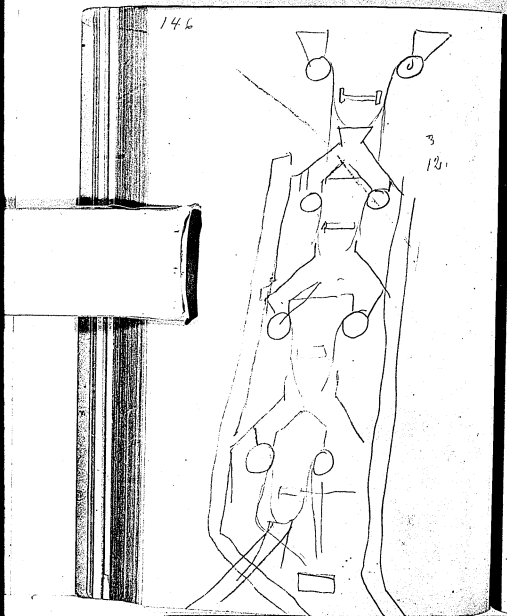
36 / 3 / 108 - 1.000 / 648 / 108 / 1.728.000

3 / 2.250 - 83 / 1.67. hour / 3 / 334.

Phmo + Et Cav Mch 24 29

while warm especially just after they come from the press + Carbonyes without distortion.

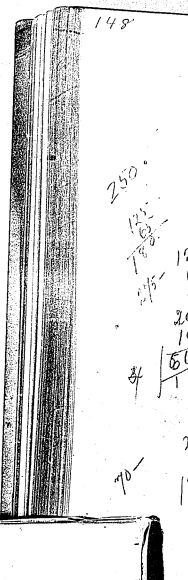
Ordinary Asphalt. Such as Byers and Cubison is easily dehydrogenized + rendered infusible by nitric acid. The powder after washing + drying is valuable in Chloroform especially if a little methylic alcohol is added - to render the drying of the fulmoil colorless. Ether tend to prevent Cracking.



Thomas Richardson Mackey Esq

15 or 25 per cent of Chloral Hydrate may be added to the powder which is soluble both in Methylated alcohol or Chloroform -

~~All the~~ The exact nature of the reactions taking place in these Bituminous products which ~~are compounds~~ approach so closely to Charcoal that they can only be distinguished from it by their Capability of being either dissolved or softened by some Solvent or Combination of Solvents ~~from~~ is not Known by Chemists. Very little investigation has taken place as these are disjointed & Contradictory.

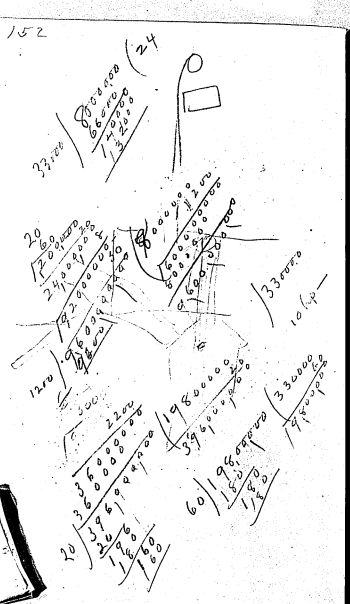


Thomas & Eb Carmichael 24 89

hence no accurate statement is possible & all that I can do is to point out generally - Neither is it possible to give exact quantities or times or temperatures, as all Bituminous residues are of very complex nature & react on each other, change with every change of temperature or conditions under which they are produced. ~~The generic element~~ But all can be resolved by heat into compounds ~~that~~ richer & richer in Carbon until a point is reached where the heat must be

Phono + Tel Gav Mch 24 69

discontinue for to prevent final decomposition or Carbonization, and that they are thus plastic + may be organized into filaments and that by chemical agency which serves to remove Hydrogen be made infusible while being Carbonized + that the final Hydrogen or other atom of matter combined with the Carbon ~~which should~~ to form volatile products after the filament is charcoal. and that instead of acting on the organized filament after formation

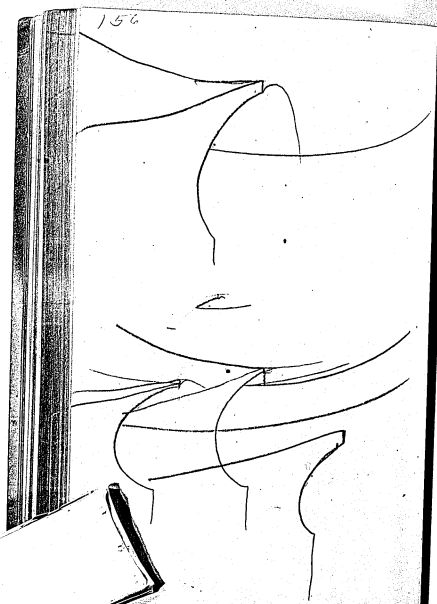


Phenol Ch Gourmehy 89

This action may take place previous to quantitative but the fulminate may still be produced as the resultant compounds of the action of say Nitric acid on all the residues after drying of the mass of volatile constituents is the production of a compound insoluble but soluble in Chloroform on inspissating of Chloroform with acid. Ether, Methyl alcohol, Hot Aniline, Nitro Benz, Chloral Hydrate, Napthaline, Anthracene

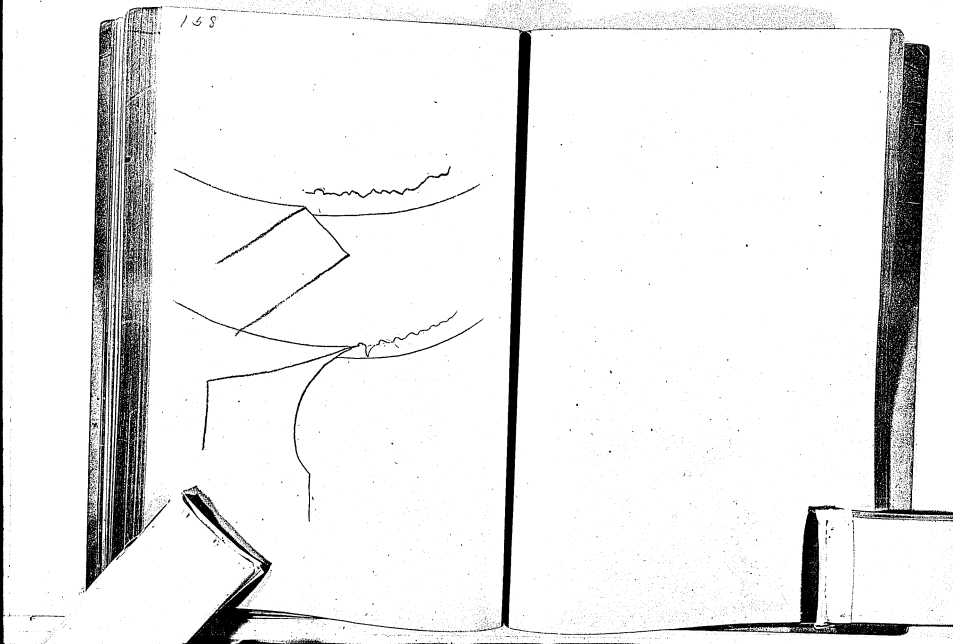
Phono & El Saw mch 24, 89

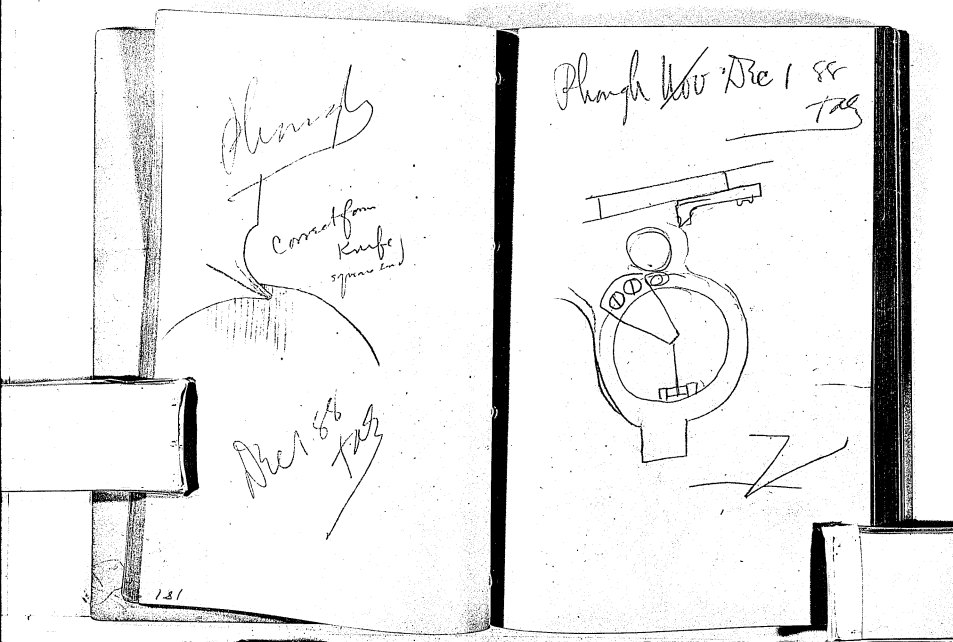
~~Asphalts~~ Bituminous bodies
Can be analyzed & formed
from pure Volatile organic materials
free from Asphalts by passing
the vapors through
Red hot tubes & Condensing
the residue & evaporating
to a pitch which is called
like asphaltum
called for instance
Benzole gives what
is known as Bitumene
The residues due to
the distillation of Friendly
Enemy Organic substances
not heated beyond
Carbonization gives
the Bituminous residue

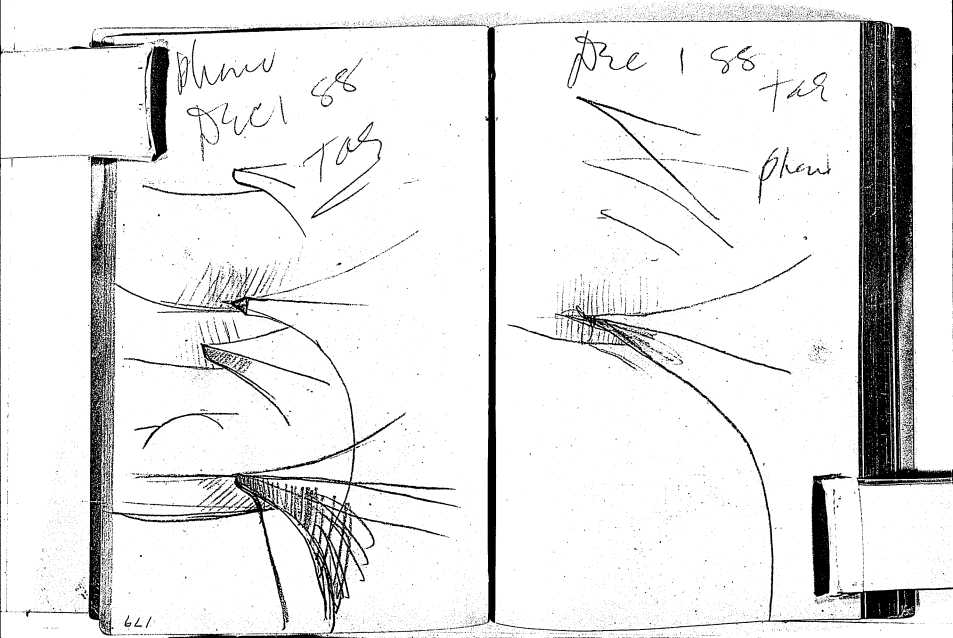


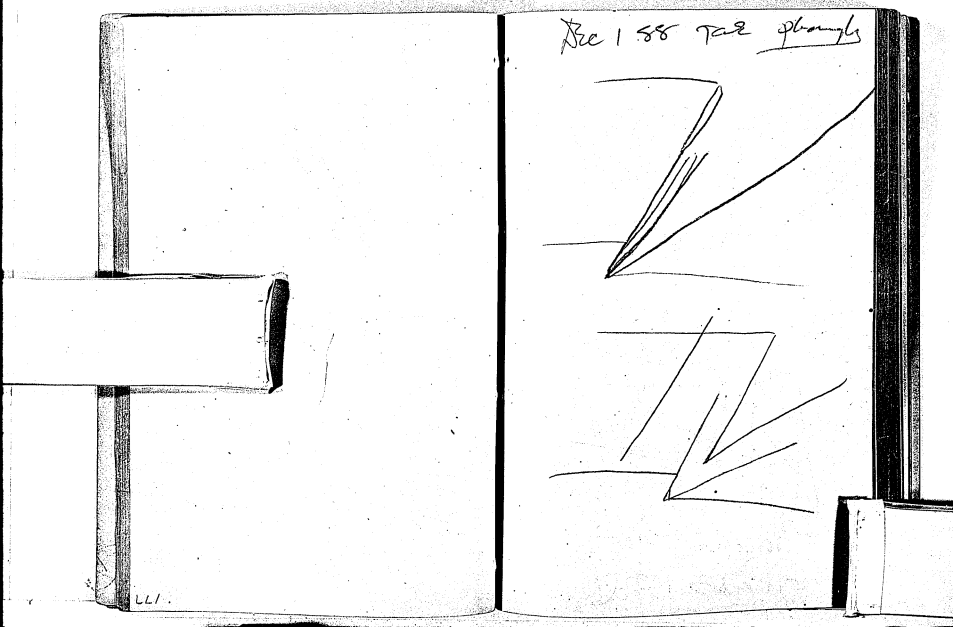
Phono: E.L. Cav-Mch 24 89

All the Carbon filaments produced by this process change their resistance while giving light and although not so serious as to render the lamps unavailable for giving light commercially an adjustment is made to the current to compensate for this change. Up to the present time no attempt has been successful to prevent this change of resistance after long burning. I believe I can accomplish the result by this process owing to its capability of being made in many ways with different constituents from cellulose now generally used, which change in resistance may little or no be of high commercial Value —


158

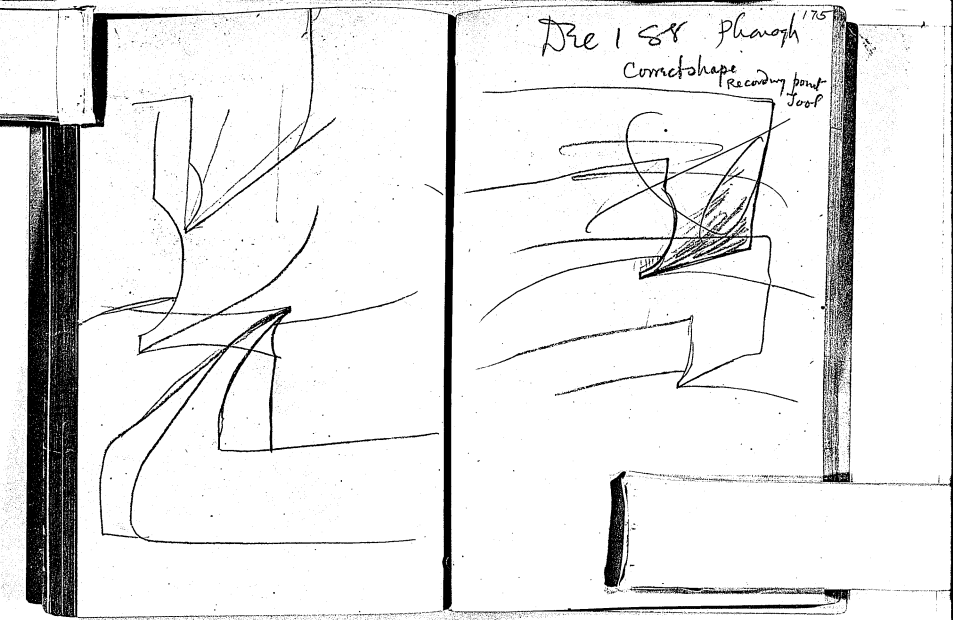

Dec 1 86
TAG
131
Dec 1 88
TAG

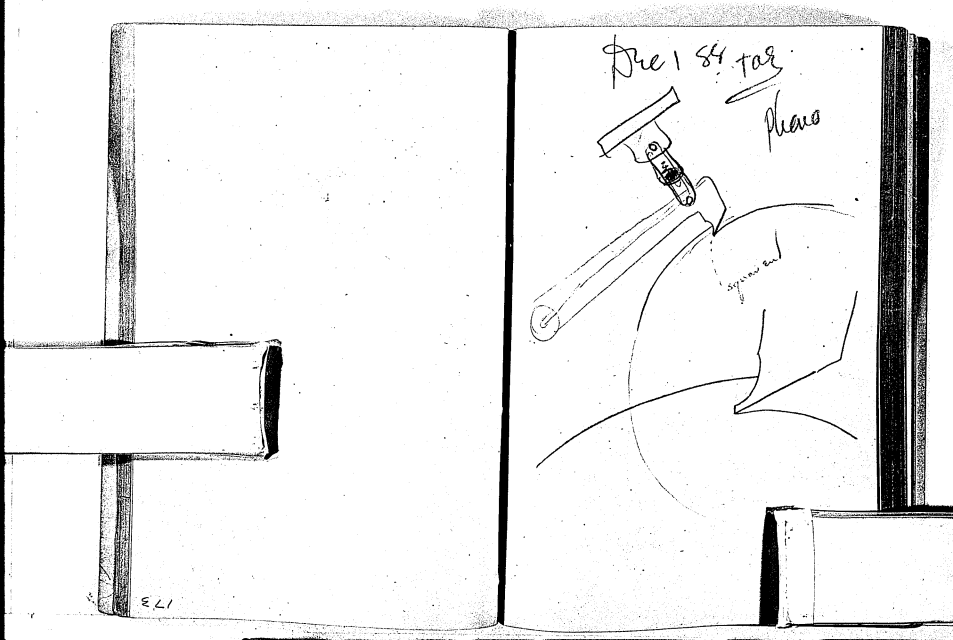

Phaw
Dec 1 88
TAR
Dec 1 88
TAR
Phaw

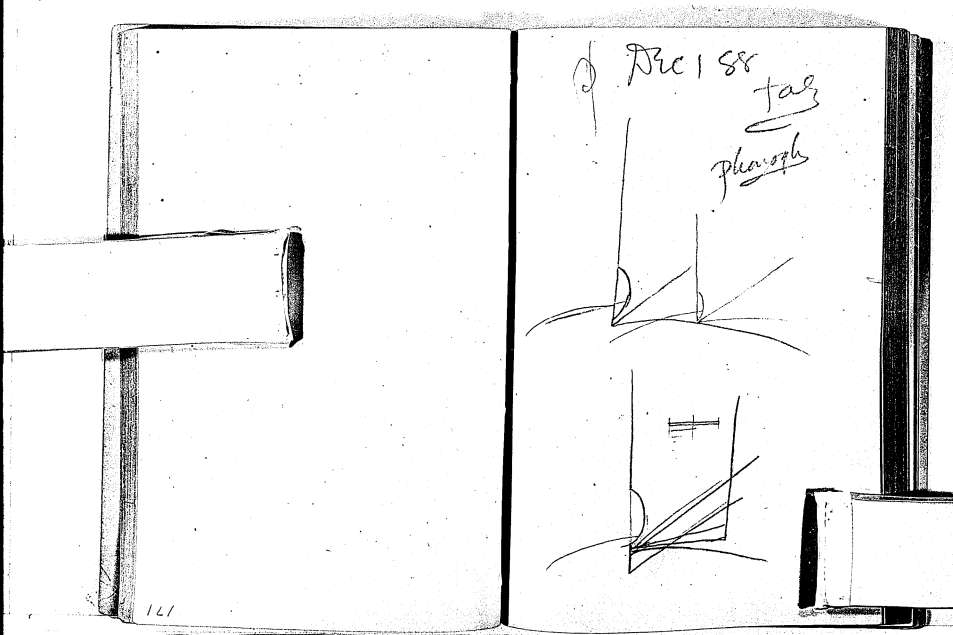

Re 1 88 Tar glossy

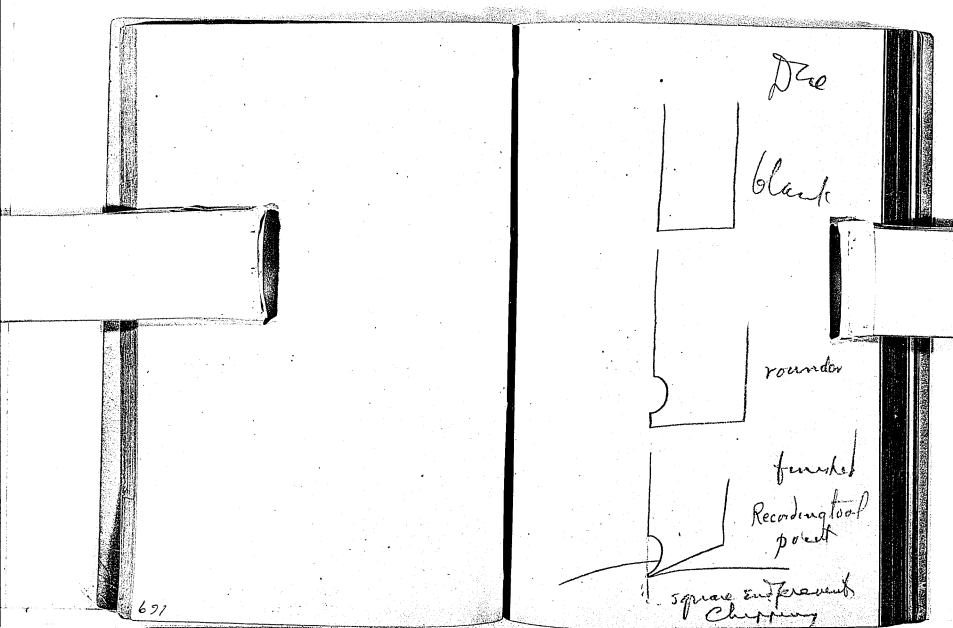
Dre 1 68 Pharaoh

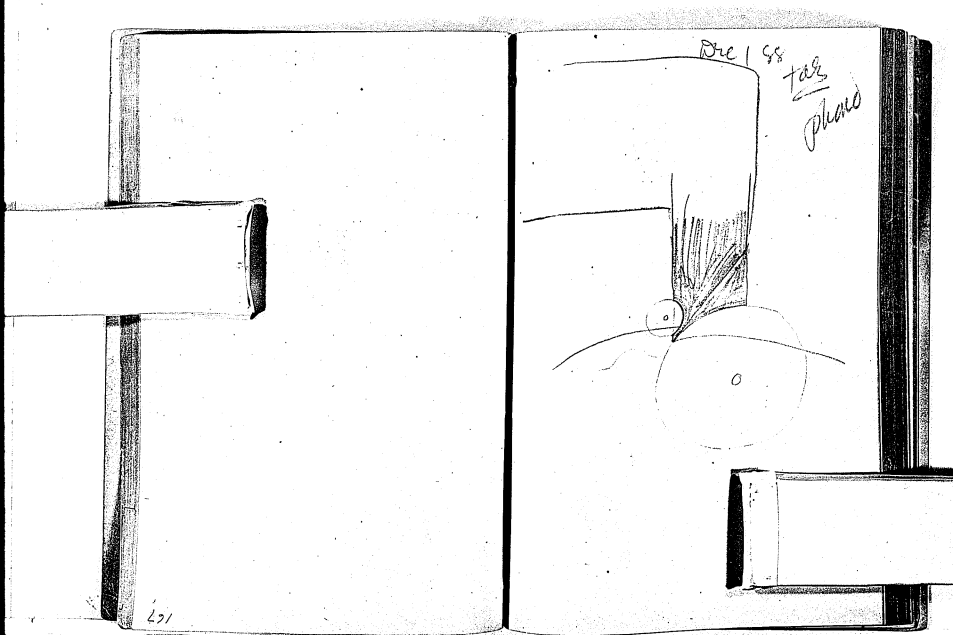
Correct shape Recording point Joop

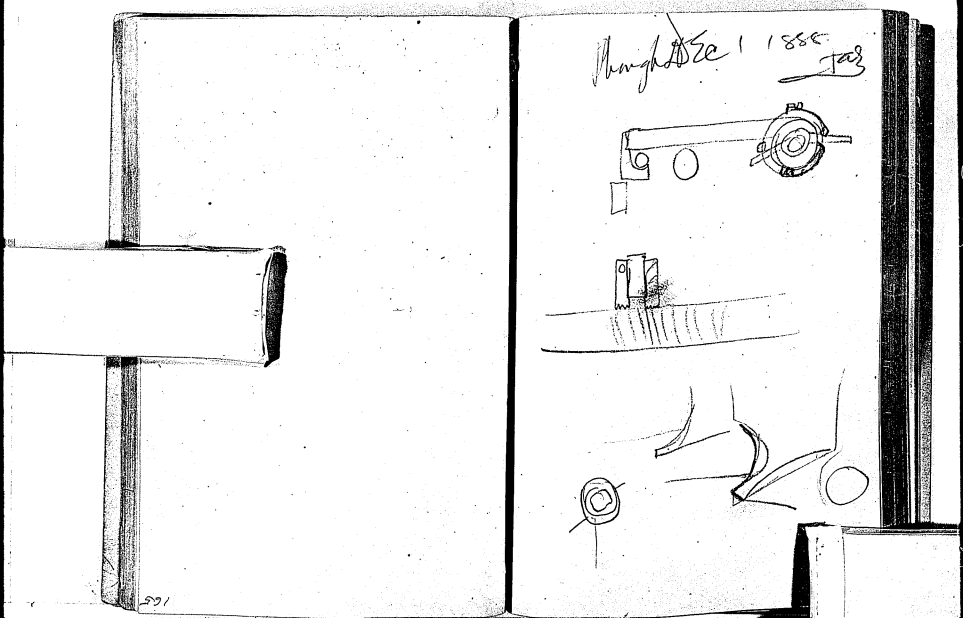


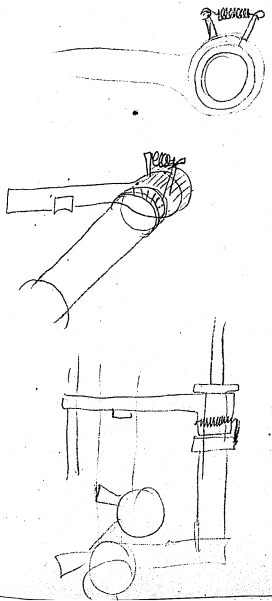

Pre 1 84 tar
Plano
sigmoid


Dec 1 88
tag
pharaoh


Die
Blank
rounder
finished
Recording tool point
square end for work Chipping


Dec 1 68
tail
plane





to give the best results, or the ~~value~~ of the results would be practically impossible in the present state of chemistry & would be unnecessary for carrying out my invention. ~~Therefore~~

~~The filament is~~ I preferably dehydrate & gauge the filament by immersing them in Common Kerosene in which we dissolve one part of Chloride of Sulphur to 20 of Kerosene and allow them to remain for 100 hours – The filament so is nearly insoluble



~~first~~ ~~so~~ ~~some~~ ~~oil~~ ~~dehydrate~~ ~~bath~~ ~~if~~ ~~other~~ ~~reagents~~ ~~from~~ ~~the~~ ~~bath~~ ~~and~~ ~~then~~ ~~possible~~ ~~some~~ further treated ~~with~~ in a bath containing of water 5 parts of acetic acid to 20 of

greatly dehydrated & the sulphur left in by the reaction so removed by oxidation ~~that~~ the filament does not fracture or distort during carbonization

Another method of dehydrating is to use a Perchloride of ~~phosphorus~~ Antimony ~~dissolved~~ in Chloride of Ethyl in about the same proportions as with the Chloride of Sulphur, owing to the great variability of the original material. The best proportion

must be determined for each
lot or kind of material
when the pendrachlorides
used Oxychlorides of Nit-
will be taken in the
proportion of the fulminate
this may be decreased
out by hydrochlor-
ides. A subsequent
treatment by Nitric
acid compromises the
chemical of the fulminate
still further. —

~~Detonating agents~~ The fulminate
may be dehydrated by Nitric acid
~~Acetone~~ alone ~~possesses but~~
~~known action upon Explosives~~
of the action of the reagent
is gradually

In the chemical theories
many methods
of dehydrogenizing these
asphaltic filaments to
the point of non fusibility
& only mentium a single
method which Rhine
found simple & effective

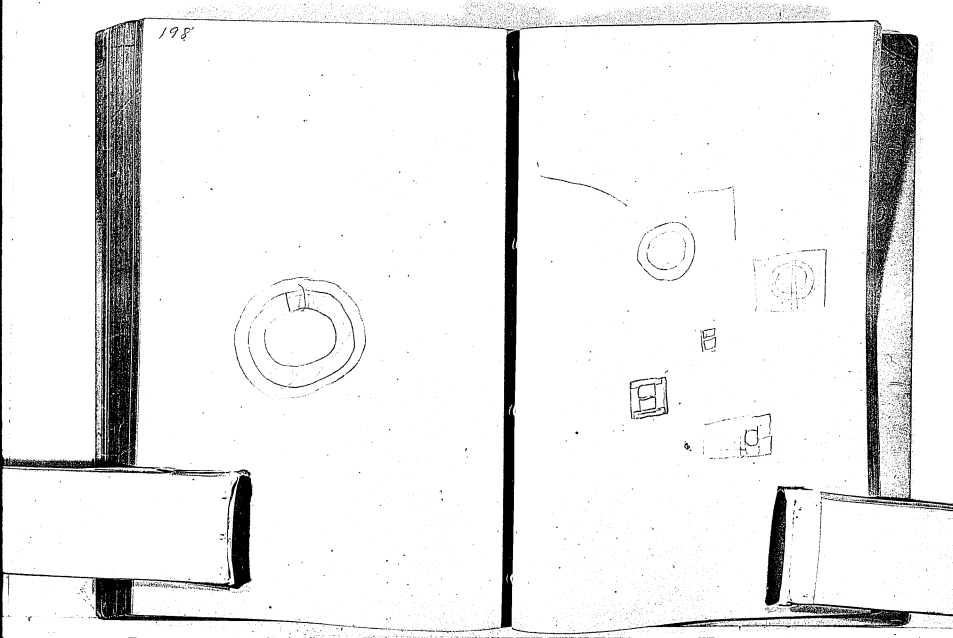
The 2nd method is the partial
dehydrogenization of the
Asphaltic material
before formalem into
filaments - ~~The material~~
~~is dissolved in chloroform~~
~~and then acted on by~~
~~passing Ozone through~~
~~the solution. The Ozone~~

~~The Process~~

~~How to carry out the invention~~

The materials are called Asphalt is powdered very fine & thrown into ordinary Commercial Nitric acid & stirred a strong evolution of nitrous fumes takes place ~~and~~ the Hydrogen of the Asphalt being oxidized by the O of the Nitric acid and it is probable that an oxidization of the remaining Hydrocarbons also takes place. The cokale cakes together by

the heat after the reaction
after no more fumes are
given off the lump is
dried and regrounded
and put in a fresh charge
this take place several
times until no appreciable
quantities of nitrous
and sulphurous fumes
the powder is then
washed in water and
dried repowdered to
200 mesh screen & thoroughly
dried. The resultant powder
is then mixed with a
solvent which varies
according to the original
source from which the
asphaltic substance was
obtained — In the

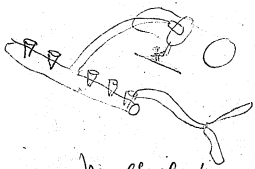


Case of Ordinary Baled
Asphalt. the powder after
its treatment with Nitric
acid is insoluble in
Chloroform and also
warm Chloral Hydrate
To form the ointment 9
dissolve the powder in
Chloroform filter the solution
then evaporate or distill
off the chloroform to the
consistency of Melasses
+ then add 10 parts
of Chloral Hydrate to
90 parts of the powder
+ still further evaporate
until it reaches the
consistency of stiff plaster
the ~~Ointment~~ is then applied after

Kneading through the fingers to remove any undesirable form of potash is placed in the ~~chamber~~ of the press. The chamber of which is warmed to about 250° F. ~~the fabric and the fabric are~~ ~~heavily impregnated~~ to cause the Chloral Hydrate to act readily the filament are then Evenly squeezed to retain their shape perfectly during Carbonization.

Phono & Elec Cav mod: 21 Sep

The Use of Chromium for phono points & Tool-
Use of pure Iron by
Reduction from pure salt.
Say Reduction by Hydrogen
then working into shape
working A steel by
Cementation & then
grinding -



Multiple Needles

Phmo + E & Law Mch 31/89

Syrian or other Asphaltic Substances heated to drive off all volatile matter that comes off at 300 C then dissolving in Chloroform + filtering — to purify by ash or it may be lime precipitated — then dissolve in Bisulphide after removal of Chloroform + putting in the Bisulphide Enough Sulphur so. as Evaporation of solvent Sulphur will be left mixed intimately with the Asphalt

Carbon Phanol EL

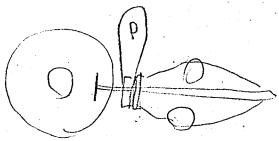
The amount being sufficient to dehydrogenize the Asphalt & prevent Melting during Carbonization —

Also the Asphalt may be dried after purification & made into a paste with Chloroform & Strong Sulphuric acid squirted & the fols. The Sul acid at high temp reduces or Enters into Combn to prevent melting + $SO_2$ going off as a gas —

Iodine may also be dissolved in Disulphide

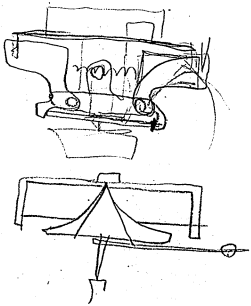
of Carbon & an Evaporalem the
Iodine will act as a
dehydrogenizer -
Oxide of mercury can
be mixed with the
asphaltic Material
and an Combustalem
the O will dehydrogize
the asphaltic Material
& the Hg will go off
in Vapor thus leaving
the filament free -

By dissolving the material
after heating to drive
off the Very Volatile Constituents
in Chloroform or other
good solvent - not materially




acted on by Chlorine.
The Chlorine may be
passed through the
Salulin until maximum
Chlorination or rather
dehydrogenation is
obtained - afterwards
to obtain a higher
or greater dehydrogen
of the material & this
will depend on the
material the salulin
may be treated with
Nitric acid one atom
of O takes out H

214



Certain kinds of asphalt like purified trinidad or Hard Cuban are often purified by solvent when the ash is taken out, may be boiled in a ~~very~~ wide flat dish constantly stirring atmospheric Oxidation takes place at the same time the more volatile constituents are driven off and a point is reached ~~of~~ when the material only remains soft at 400 C. In this state

It may be accumulated in filaments by heat around the disc of the press by slow Carbonization the remaining Hydrogen Can be driven off — the filament fully Carbonized without distortion

I have found as a rule that all that portion which is dissolved out of an Asphaltic residue or mineral Coal like Lignites or Semi Coals is preferable for this purpose to that dissolved out by other Solvents

The greatly dehydrogenized
material of the Asphaltic
or Bituminous Character
Studied has other solvents
Especially when aided
by heat but the solvent
action also greatly depends
on the original nature
of the material oil of which
there is the same & also
on the character of the
reactions involved in
dehydrogenizing it to
the various melting point
among Solvents are
Methyl alcohol, Chloral
Hydrate, Oil Myrcene
Limene Oil, Oil Camphor
Eucalyptus Oil

Nitric Ether.
Nitrite of amyl-
Sulpho-Hydrocarbon bases
Like. Sulpho-carbymethylamin
oil mustard & several
other Sulpho Compounds.

Hollow filaments may
be quilted in the same
manner as leadflips
& hollow Macaroni.
The advantage of hollow
filaments are great with
Large Candle power lamps
as it gives a more even
Carbonization throughout
the mass -

A carbon filament made of a from matter produced by ~~asphaltic material~~ the natural

A ~~Carb~~ filament for ~~forming~~ Carbonization ~~of forming~~ ~~of plastic material of asphaltic from~~ from a plastic mass.

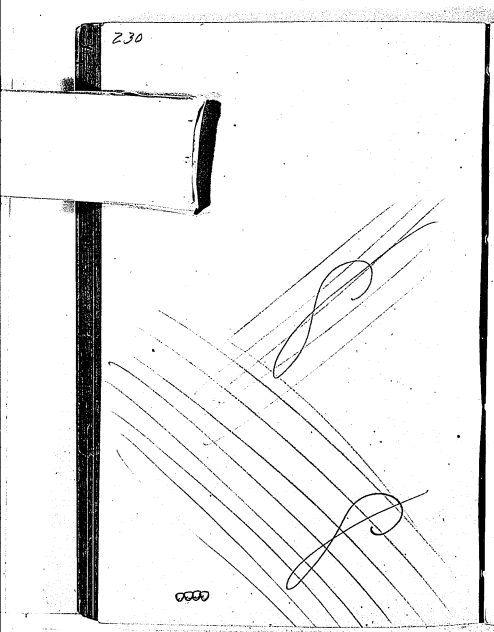
A carbon filament made ~~if~~ ab the residues from the destructive distillation of organic matter artificially or naturally ~~Asphaltic~~ Asphaltic or Bituminous material

A filament for Carbonydum formed from a plastic mass known as pitch asphaltum or Bituminous matter and depositing the carbon to render the filament conductive for the purpose of rendered unfusible before Carbonydum by chemical agency.

A filament of Carbon made from the ~~cellulose~~ decomposition products of Organic material known as pitches asphaltum or Bituminous matter

A filament for Carbonydum formed from a plastic mass of material such as asphaltum or Bituminous matter acting upon such filament by a Hydrogen or Oxidizing agent to render it unfusible a part of the Whilst being Carbonized

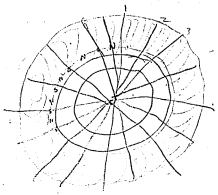
~~(Specification for Carbonization~~
~~Consisting of a flexible~~
~~Carbonaceous~~ plastic material
capable of being rendered
by heat or Solvents, formed
by mechanical pressure
&c, filaments, and then
subjected to a further
~~&c~~ a chemical action
whereby that Element
which renders them
fusible is displaced



A filament of Carbon for an incandescent lamp made from the ~~decomposition products of organic material~~ pitchy Asphaltic or Bituminous products from the decomposition of organic material either anhydrous or natural,

Same add - ~~which~~ made infusible before carbonization.

Same - dehydrogenized ~~by~~ chemical agency to render bituminous compounds infusible during the act of Carbonization.



762

238

amidosulphobenzoic acid

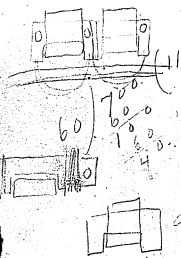
dark violet, Carbon gas

dissolves easily ammonia

1 Watt 455 —

Sulphonaphthalene for
mondation Watts

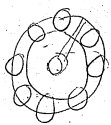
522 x 3.

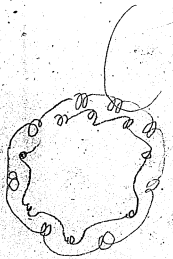


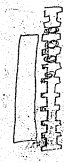

$CO_3$

$Na_2 CO_2$ Na CO
Na CO

CO







**Notebook, N-88-06-01.1**

This notebook contains dated entries from June 1888. All entries are by Edison. At the beginning of the book is a 49-page list of minerals wanted for a specimen cabinet. On the following pages are notes and drawings relating to phonograph experiments, resins for recording cylinders, batteries (including those for the phonograph), and ore milling. Some of the notes on the phonograph contain references to Edison's recent patent applications. At the end of the book are several pages of miscellaneous drawings. The pages are unnumbered. Approximately 90 pages have been used.

XE172 N-88-06-01.1

Nice specimen is wanted of each kind for Cabinet, but a small one —

Considerable quantities are wanted for experimental purposes —

Please give prices for the Cabinet Specimen & price per lb for the common varities in quantities and probable quantity in ore — I have dropped the formula as unnecessary — This list is from Dana — I am particularly desirous of obtaining mineral fossil Resins — Liquids Bitumens etc — In many cases I shall want 50 lbs of a mineral =

T A Edison

Mark the 2 prices opposite name of mineral

Orpiment.
Dimorphite
Stibnite
Bismuthinite
Tetradymite
Joseite
Wehrlite
Molybdenite

Price a Per cent in ore

Dyscrasite Ag 2.86

Chilenite Ag 6 Bi

Domeykite $Cu_3As_2$

Algodonite $Cu_6As_2$

Whitneyite $Cu_9-As_2$

Argentite $Ag_2S$

Naumannite $Ag_2Se$

Eucairite $(CuAg)_2Se$

Crookesite $(CuTl)_2Se$

Galenite $PbS$.

Huascolite $PbZn.S$

Clausthalite $PbSe$

Zorgite $(PbCu)Se$

Lehrbachite $(PbHg)Se$.

Altaite PbTe
Bornite (Cu Fe) S
Berzelianite Cu Se
Castillite Cu Zn R-S Fe S
Alabandite Mn S
Dyepoorite Co S
Penthandite (Ni Fe) S
Germanite

Sphalerite Zn S
Marmatite (Zn Fe) S
Przibramite (Zn Cd) S
Voltzite Zn S - Zn O.

Hessite Ag Te
Dolomenzite Ag S
Acanthite Ag S

Chalcocite $Cu_2S$.
Stromeyerite $(Cu,Ag)_2S$
Sternbergite $(Fe,Ag)S_2Fe_2$

Cinnabar $HgS$.
Tiemannite $HgSe$ ?
Millerite $NiS$
Troilite $FeS$
Pyrrhotite $FeS-Fe_2S$
Greenockite $CdS$
Wurtzite $ZnS$
Niccolite $Ni.As$
Breithauptite $Ni.Sb$
Kaneite $Mn_4As_3$
Schreibersite $(Fe,Ni)_3P$.

Pyrite $FeS^2$

Hauerite $MnS^2$

Cubanite $FeCuS_2$

Chalcopyrite $(Cu,Fe)S_2$ . $FeS^2$

Bornhardite $(Cu,Fe)_3SFeS^2Cu_2S$

Stannite $CuFeZn-S\ SnS^2$

Linnaeite $CoS\ CoS^2$

Carrollite $(Cu,Co)S_2CoS^2$

Smaltite $(Co,Fe,Ni)As_2$

Skutterudite $CoAs^2$

Cobaltite $Co(SAs)^2$

Gersdorffite $Ni(SSbAs)^2$

Corynite $Ni(SAsSb)^2$

Laurite $RuS^2O^2$

X,

Marcasite $FeS_2$

Leucopyrite $FeAs_2$

Rammelsbergite $NiAs_2$

Mohsite $FeAs_2 + FeAs$

Arsenopyrite $Fe(SAs)^2$

Glaucodot $(CoFe)(SAs)^2$

Pacite Fe S As

Alloclasite Co S As Bi

Nagyagite

Covellite, $CuS^2$

Chalcostibite $CuS-SbS$

Emplectite $CuS\ BiS$

Chiviatite $CuPbS\ BiS$

Berthierite $FeS, SbS$

Dartorite $PbS\ As_2S$

Zinkenite $PbS\ SbS$

Jordanite
Miargyrite
Plagionite
Binnite
Brongniardite
Jamesonite
Dufrenoysite
Freieslebenite
Pyrostilpnite
Rittingerite
Pyrargyrite
Proustite
Bournonite
Stylotypite
Wittichenite
Boulangerite
Kobellite
Aikinite

X

Tetrahedrite
Polybasite
Tennantite
Meneghinite
Geocronite
Stephanite
Polybasite
Enargite
Xanthoconite

Dyslyte.
Halite.
Cerargyrite
Embolite.
Bromyrite.
Iodyrite
Coccinite
Cotunnite
Molysite.
Carnallite
Tachhydrite
Kremersite
Matlockite
Mendipite
Schwartzembergite
Atacamite
Taffingite
Percylite.

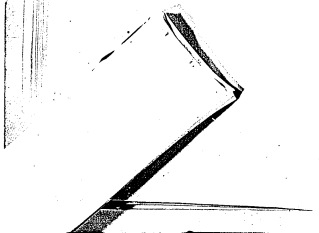
X

Fluorite
Yttrocerite
Fluocerite
Fluocerine
Fluellite
Cryolite
Arksutite
Chiolite
Chodneffite
Pachnolite
Thomsenolite
Gearksutite
Prosopite

X,

Cuprite
Percelasite
Bunsenite
Zincite
Massicot
Melaconite
Corundum
Hematite
Menaccanite
Perofskite
Spinel
Hercynite
Gahnite
Magnetite
Magnesioferrite
Franklinite
Chromite

X

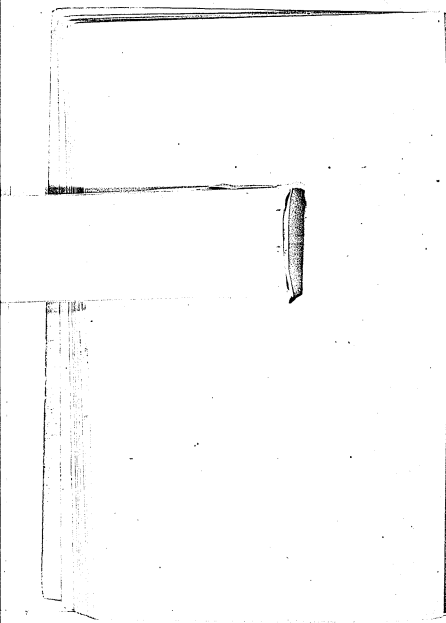


Uraninite
Chrysoberyl
Cassiterite
Rutile
Octahedrite
Hausmannite
Braunite
Minium
Brookite
Pyrolusite
Crednerite
Plattnerite
Tungite
Diaspore
Gothite
Manganite

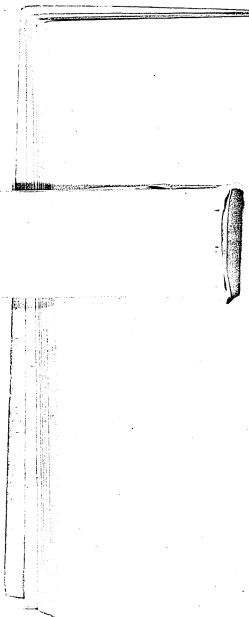
Limonite
Xanthosiderite
Beauxite
Chiasite
Brucite
Pyrochroite
Dibbsite
Limnite
Hydrotalcite
Pyroaurite
Psilomelane
Wad
Bog Manganese.
Asbolite
Lampadite

X

Arsenolite
Senarmontite
Valentinite
Bismite
Karelinite
Molybdite
Tungstite
Kermesite
Cervantite
Stibiconite
Volgerite
Quartz cem
Enstatite
Hypersthene
Diaclasite
Wollastonite

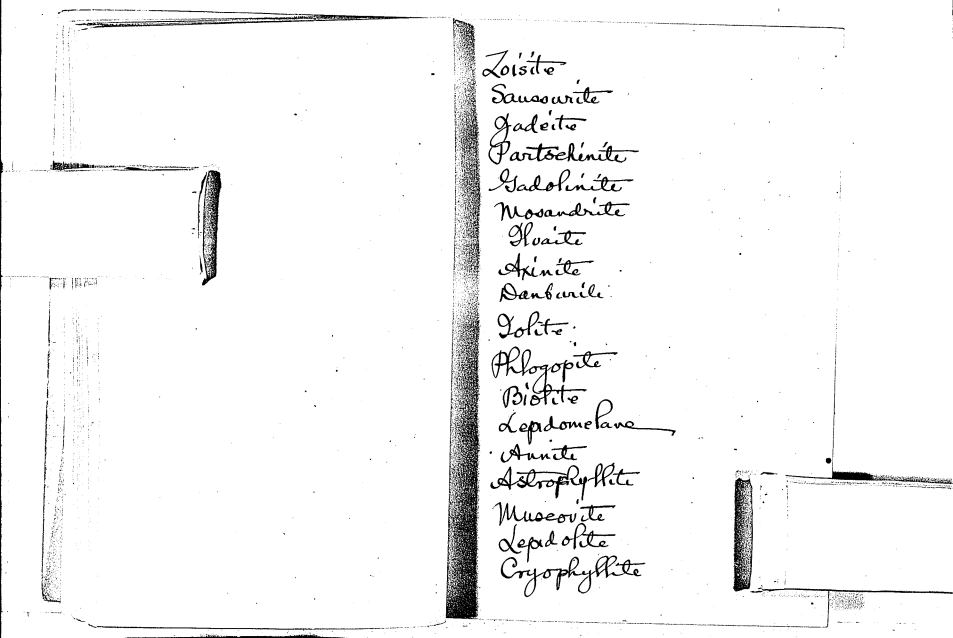


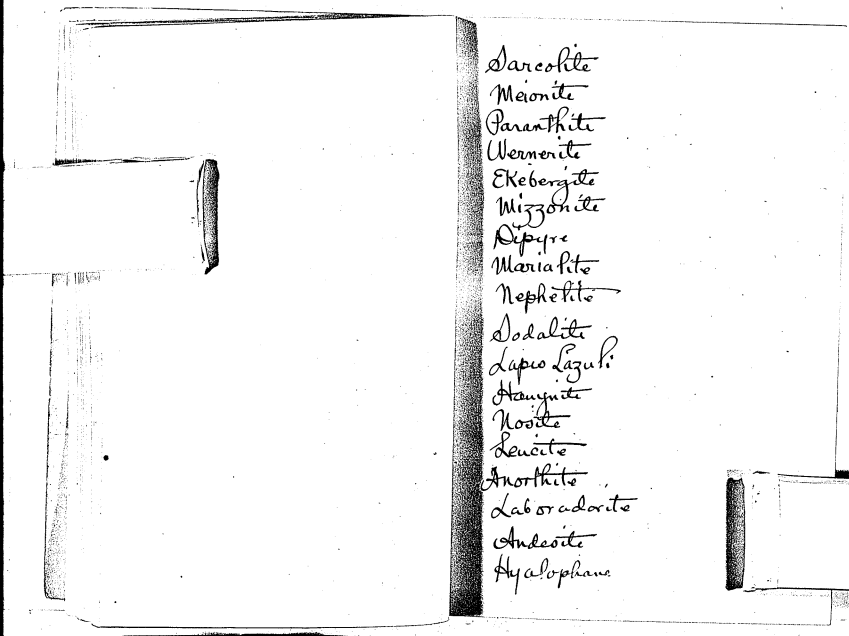
Pyroxene-
Aegirite
Acmite
Rhodonite
Babingtonite
Ppodumene
Petalite
Kupfferite
Anthophyllite
Amphibole
Arfedsonite
Crocidolite
Wicktisite
Glaucophane
Dordawalite
Tachylyte



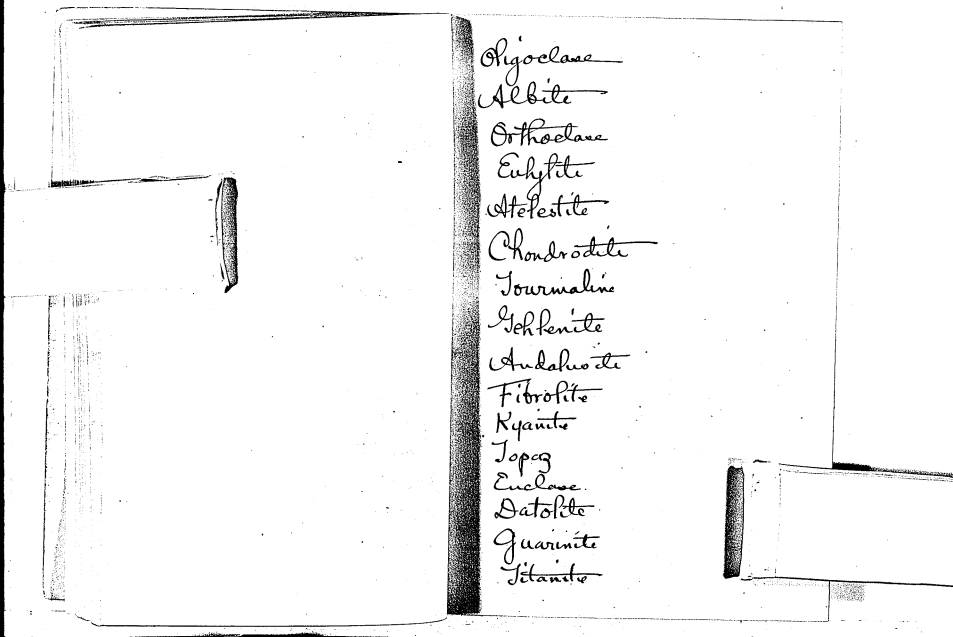
Beryl
Eudialyte
Polluxite
Forsterite
Monticellite
Chrysolite
Fayalite
Tephroite
Knebelite
Leucophanite
Wohlerite
Willemite
Phenacite
Melilphanite
Helvite
Danalite

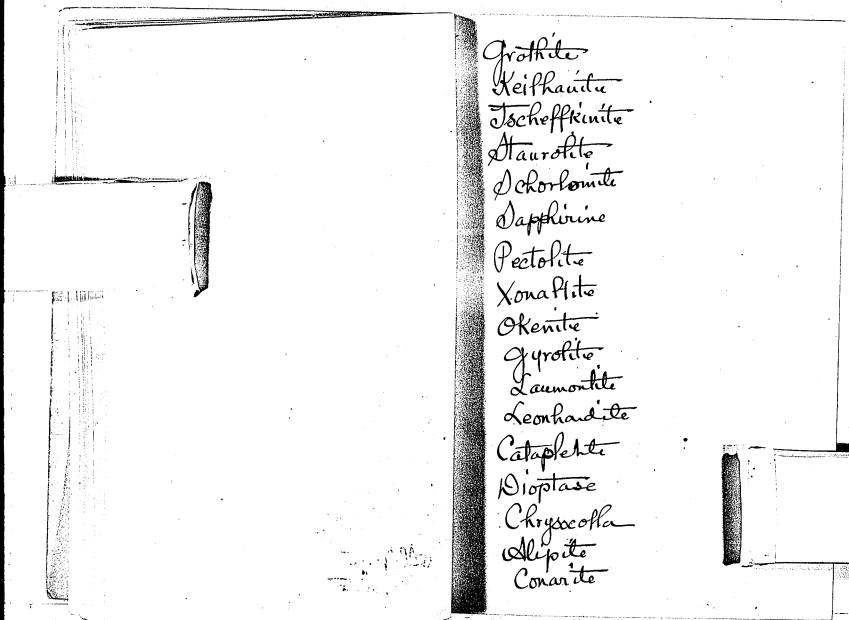
Garnet
Grossularite
Pyrope
Almandite
Spessartite
Bredbergite
Ouvarovite
Zircon
Vesuvianite
Melilite
Sphenochase
Epidote
Koelbingite
Piedmontite
Allanite
Muromontite
Bodenite
Michaelsonite

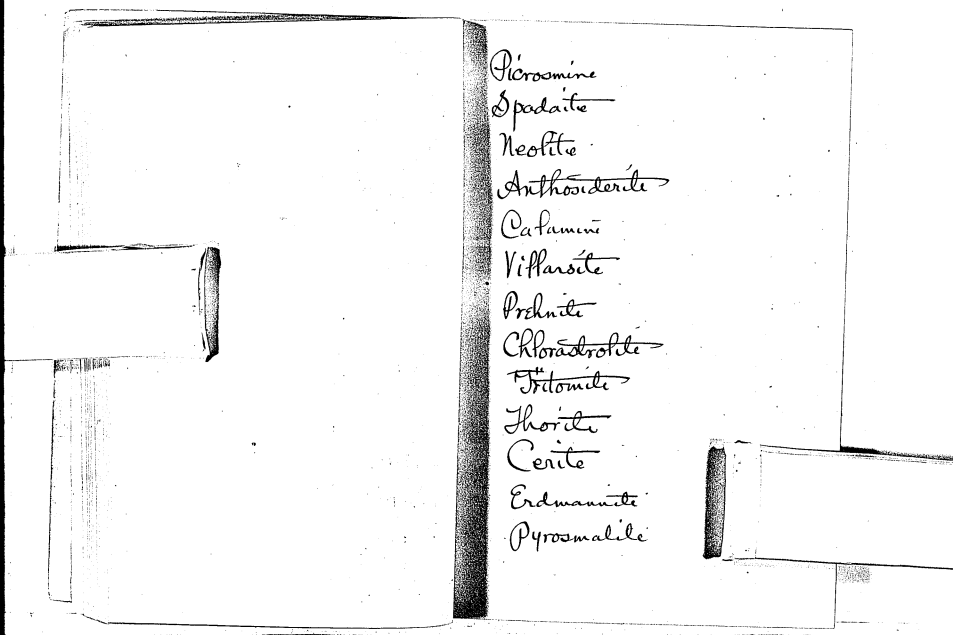

Zoisite
Saussurite
Jadeite
Partschinite
Gadolinite
Mosandrite
Thoraite
Axinite
Danburite
Iolite
Phlogopite
Biotite
Lepidomelane
Annite
Astrophyllite
Muscovite
Lepidolite
Cryophyllite

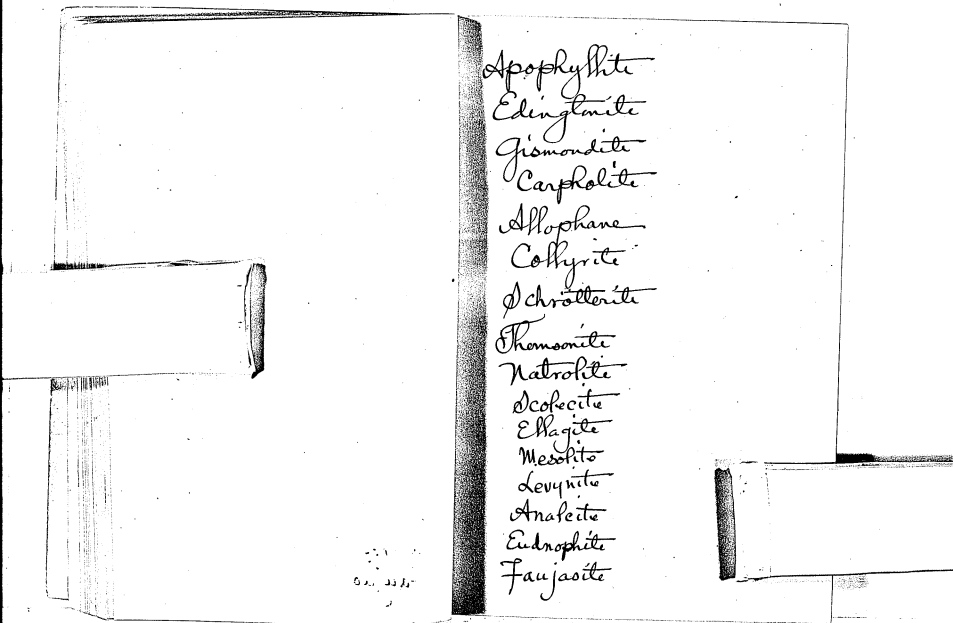


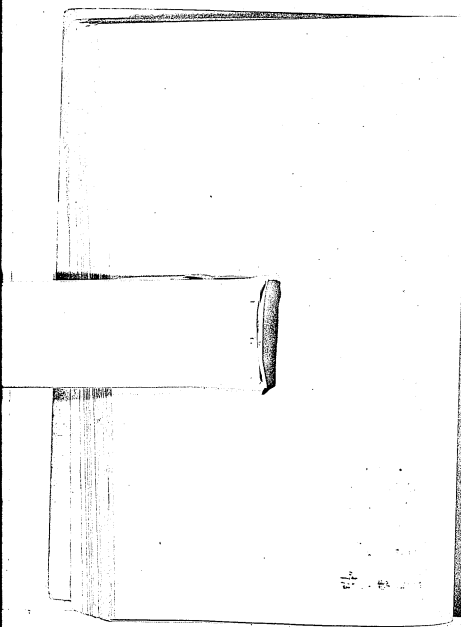
Sarcolite
Meionite
Paranthite
Wernerite
Ekebergite
Mizzonite
Dipyre
Mariapite
Nephelite
Sodalite
Lapis Lazuli
Hauynite
Nosite
Leucite
Anorthite
Labradorite
Andesite
Hyalophane


Oligoclase
Albite
Orthoclase
Eukyfite
Atefestite
Chondrodite
Tourmaline
Gehlenite
Andalusite
Fibrolite
Kyanite
Topaz
Euclase
Datolite
Guarinite
Titanite

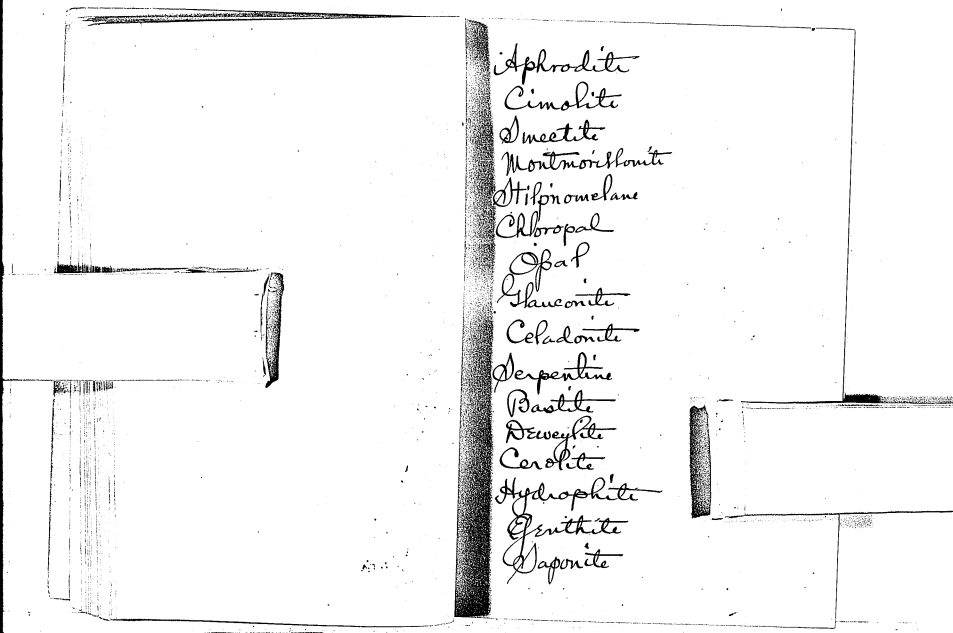

Grothite
Keilhauite
Tscheffkinite
Staurolite
Ochorlomite
Dapphirine
Pectolite
Xonaltite
Okenite
Gyrolite
Laumontite
Leonhardite
Cataplehite
Dioptase
Chrysocolla
Allopite
Conarite


Picrosmine
Spodaite
Neolite
Anthosiderite
Cafamite
Villarsite
Prehnite
Chloradrolite
Tritomite
Thorite
Cerite
Erdmannite
Pyrosmalite


Apophyllite
Edingtonite
Gismondite
Carpholite
Allophane
Collyrite
Pechrollerite
Thomsonite
Natrolite
Scolecite
Ellagite
Mesolite
Levyne
Analcite
Endrophite
Faujasite



Chabazite
Gmelinite
Herschelite
Phillipsite
Harmotome
Hypostilbite
Stilbite
Epistilbite
Heulandite
Brewsterite
Mordenite
~~Dat~~ Stoaxite
Diaspachite
Talc
Pyrophyllite
Pikrite
Sepiolite


Aphrodite
Cimolite
Smectite
Montmorillonite
Hisingerite
Chloropal
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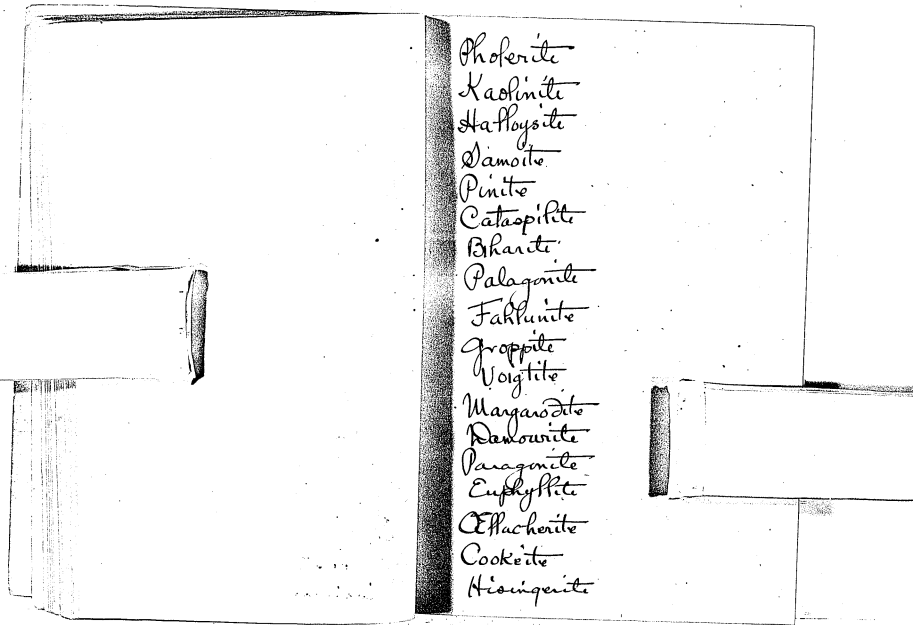
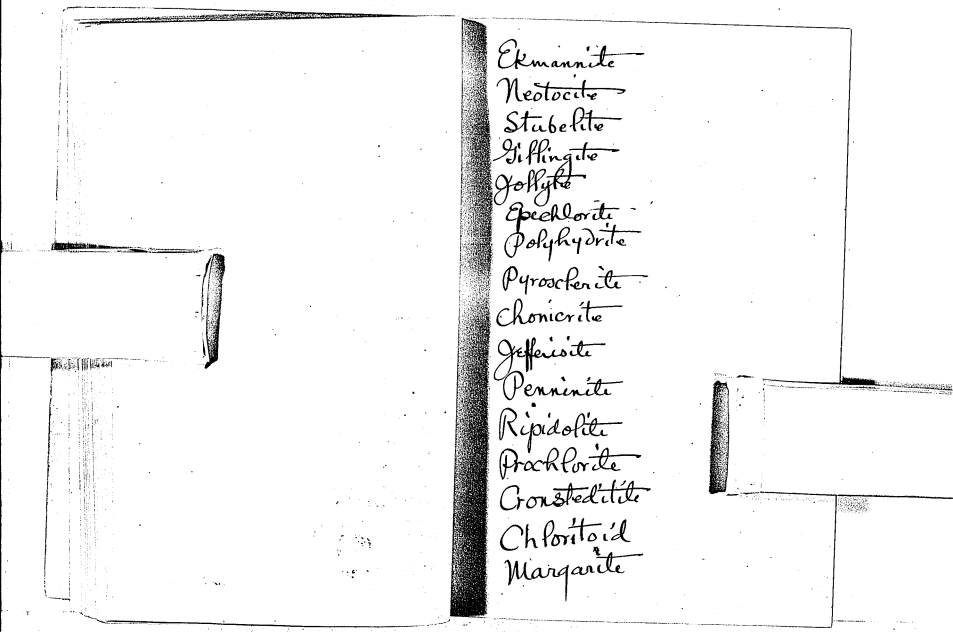
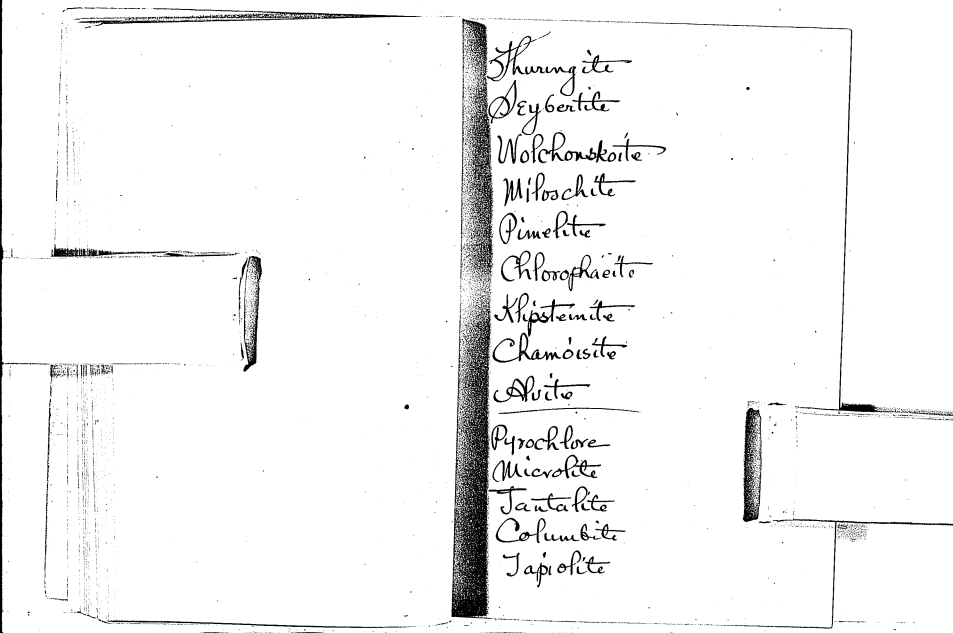
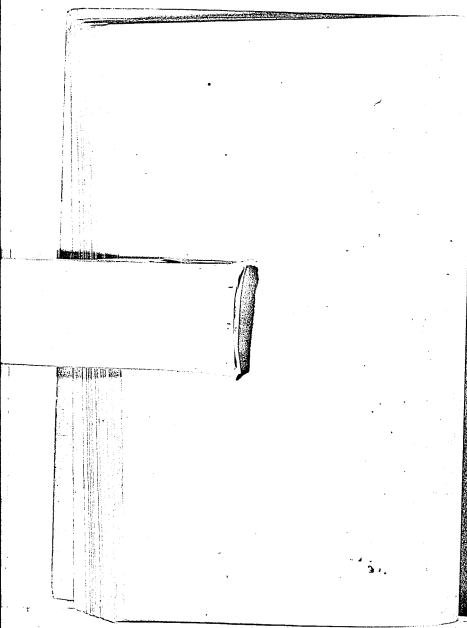
Glauconite
Celadonite
Serpentine
Bastite
Dewey Lite
Cerolite
Hydrophite
Erythrite
Saponite

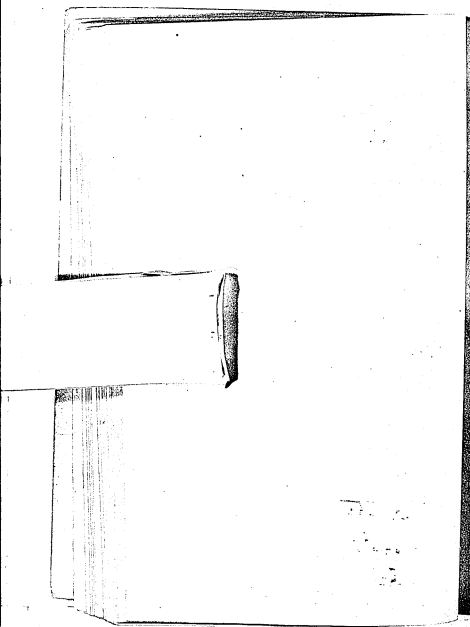

Pholerite
Kaolinite
Halloysite
Damourite
Pinite
Catasopite
Bharite
Palagonite
Faklunite
Groppite
Voigtite
Margarodite
Damourite
Paragonite
Euphyllite
Effacherite
Cookeite
Hisingerite


Ekmannite
Neotocite
Stubelite
Giffingite
Jollyte
Epichlorite
Polyhydrite
Pyrosclerite
Chonicrite
Jefferisite
Penninite
Ripidolite
Prochlorite
Cronstedtite
Chamosite
Margarite

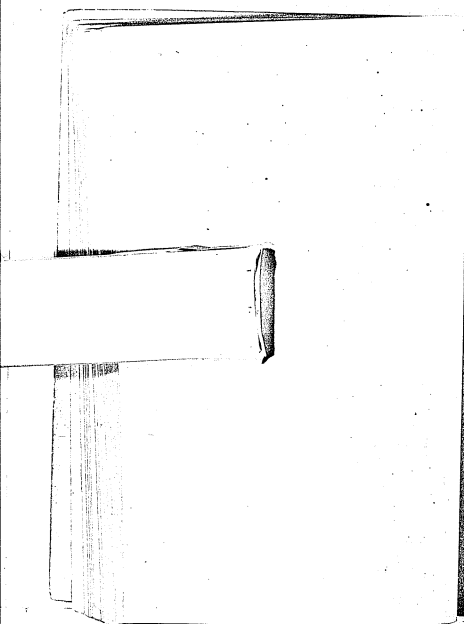

Thuringite
Seybertite
Wolchonskoite
Miloschite
Pimelite
Chlorophaeite
Klipsteinite
Chamósite
Alvite
Pyrochlore
Microlite
Tantalite
Columbite
Tapiolite



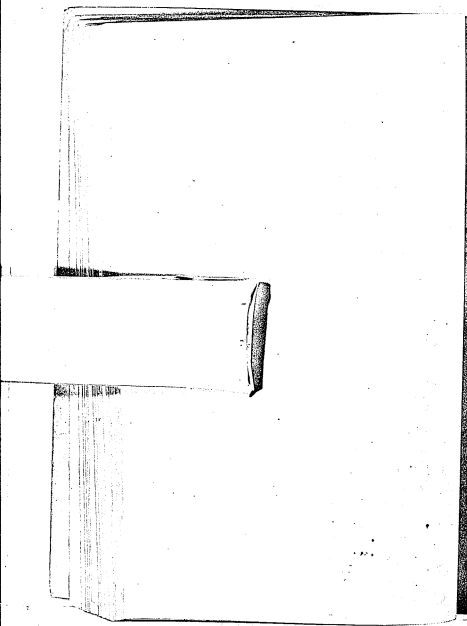
Hielmite
Yttrotantalite
Samarskite
Euxenite
Aeschynite
Polycrase
Polymignite
Fergusonite
Adelpholite
Mengite.
Rutherfordite
Xenotime
Cryptolite
Apatite
Pyromorphite
Mimetite



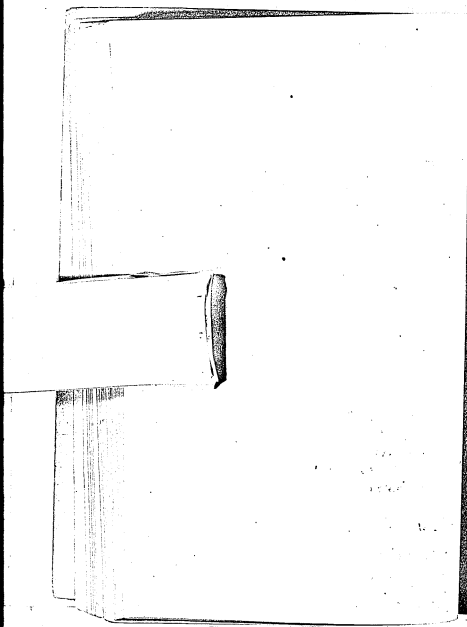
Wagnerite
Monazite
Turnerite
Triphylite
Triplite
Hopeite
Berzeliite
Carminite
Amblygonite
Herderite
Monemolite
Roweite
Ammiolite
Stercorite
Struvite
Haidingerite



Brushite
Mela brushite
Pharmacolite
Churchite
Hoernesite
Roesslerite
Vivianite
Symplesite
Erythrite
Annabergite
Cabrerite
Köttigite
Hureaulite
Chondrarsenite
Trichalcite
Thrombolite
Libethenite
Olivenite



Adamite
Conchalcite
Beyrichite
Euchroite
Jagerite
Liroconite
Pseudomalachite
Ehlite
Dihydrite
Erinite
Cornwallite
Tyrolite
Chrysocolla
Chalcophyllite
Berlinite
Callainite
Lazulite



Barrandite
Scorodite
Wavellite
Trolleite
Plumboquummite
Calcioferrite
Pharmacosiderite
Cirrolite
Childrenite
Attacolite
Augelite
Turquois
Peganite
Fischerite
Tavistockite
Dufrenite
Cacoxenite

Arseniosiderite

Evansite

Torbernite

Autunite

Amphithalite

Sphaerite

Borickite

Diadochite

Pittticite

Pseudantite

Lindackerite

Svanbergite

Ficinite

Bindheimite

Diadochite

Pittacite

~~Beudantite~~

~~Lindackerite~~

Dassoulite

Dzaebelyite

Hydroboracite

Boracite

Rhodizite

Bechilite

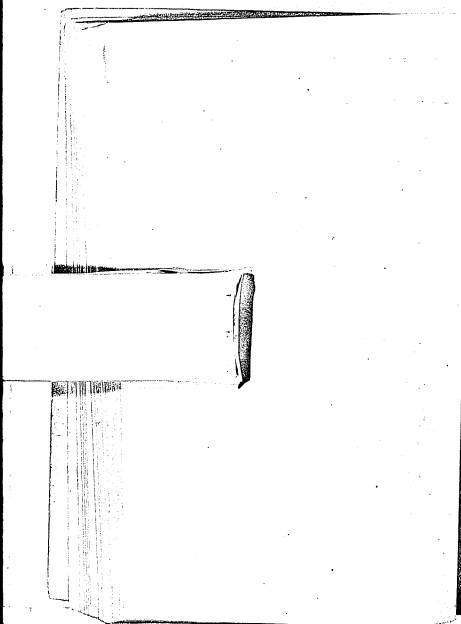
Howlite

Ulexite

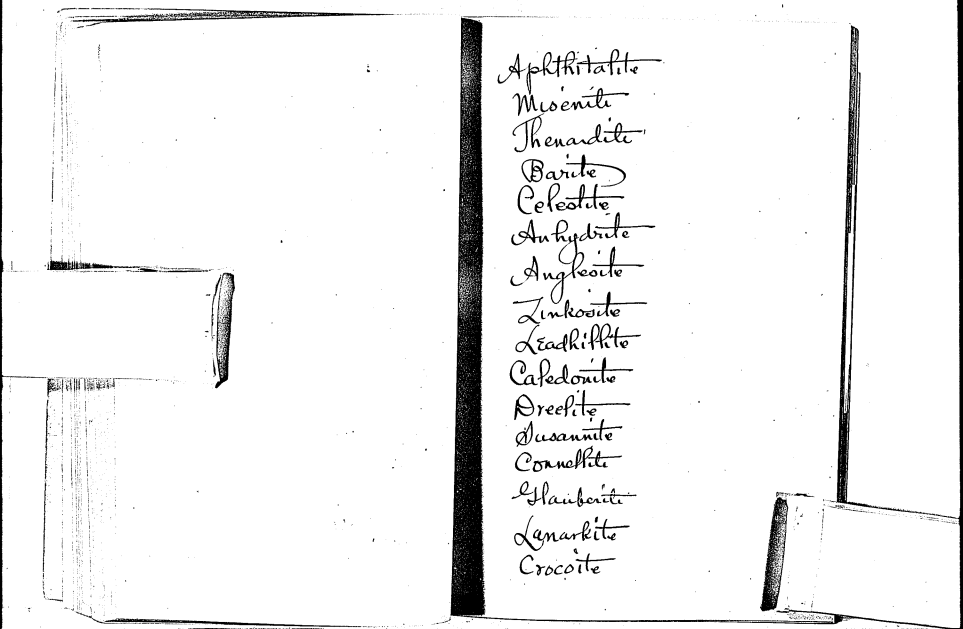
~~Cryptomorphite~~

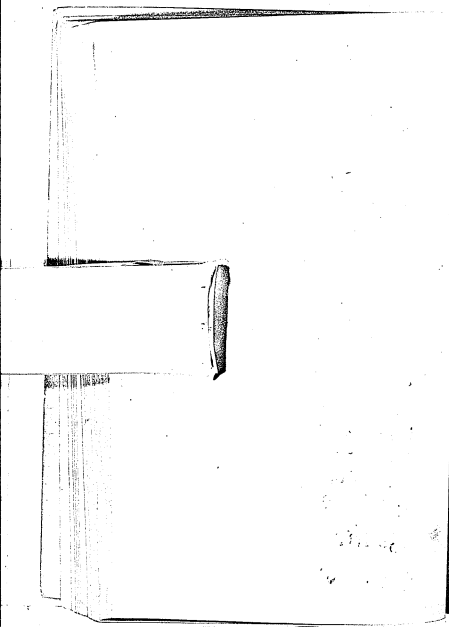
Lardorellite

Laguonite

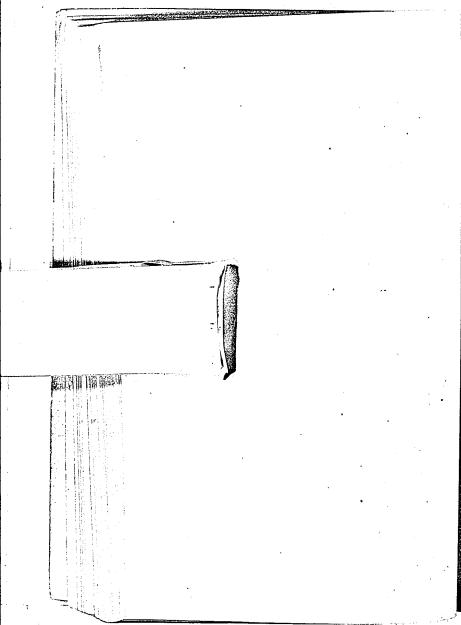


Wolframite
Hubnerite
Ferberite
Megabasite
Scheelite
Cuprioscheelite.
Stolzite
Wulfenite
Paleraite
Dechenite
Descloizite
Vanadinite
Volborthite
Chileite

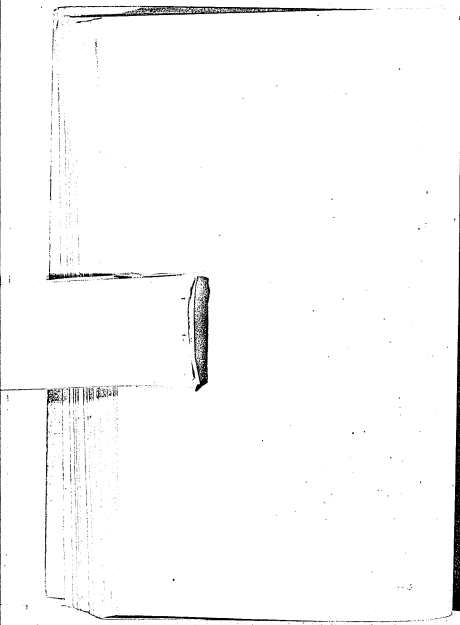

Aphthitalite
Misenite
Thenardite
Barite
Celestite
Anhydrite
Anglesite
Zinkosite
Leadhillite
Caledonite
Dreelite
Susannite
Connellite
Glauberite
Lanarkite
Crocoite



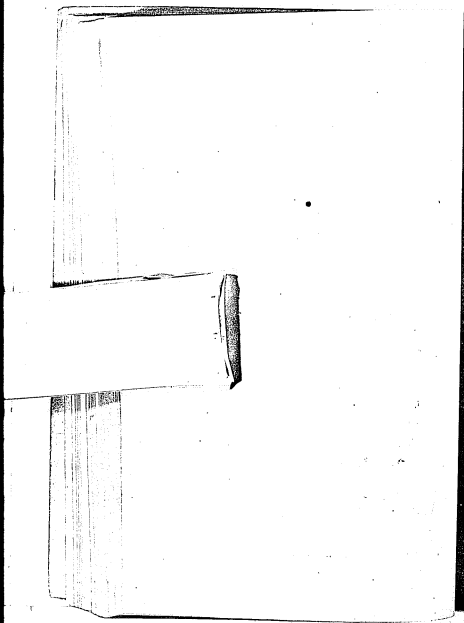
Rhœticodroïte
Vauquelinite
Godsaïte
Pettkoïte
Alumian
Mascagnite
Boussingaultite
Lecontite
Mirabilite
Gypsum
Kieserite
Polyhalite
Manandite
Picromerite
Bloedite
Loewite



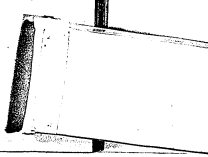
Epsomite
Tauriscite
Fauserite
Melanterite
Pisanite
Gf Goslarite
Bieberite
Morenosite
Chalcanthite
Alunogen
Coquimbite
Tschermigite
Kalinite
Voltaite
Blakeite
Mendozite

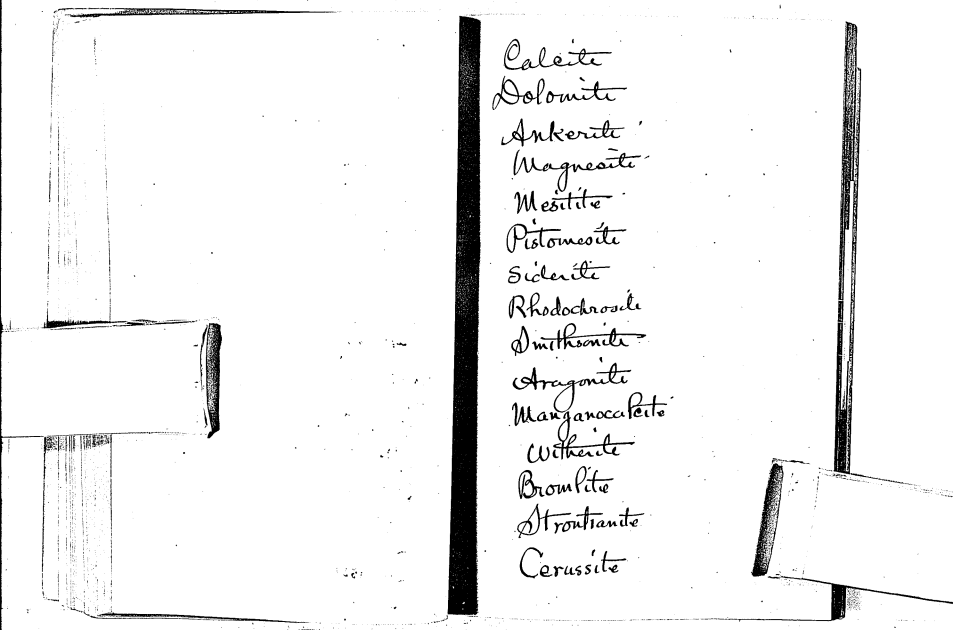


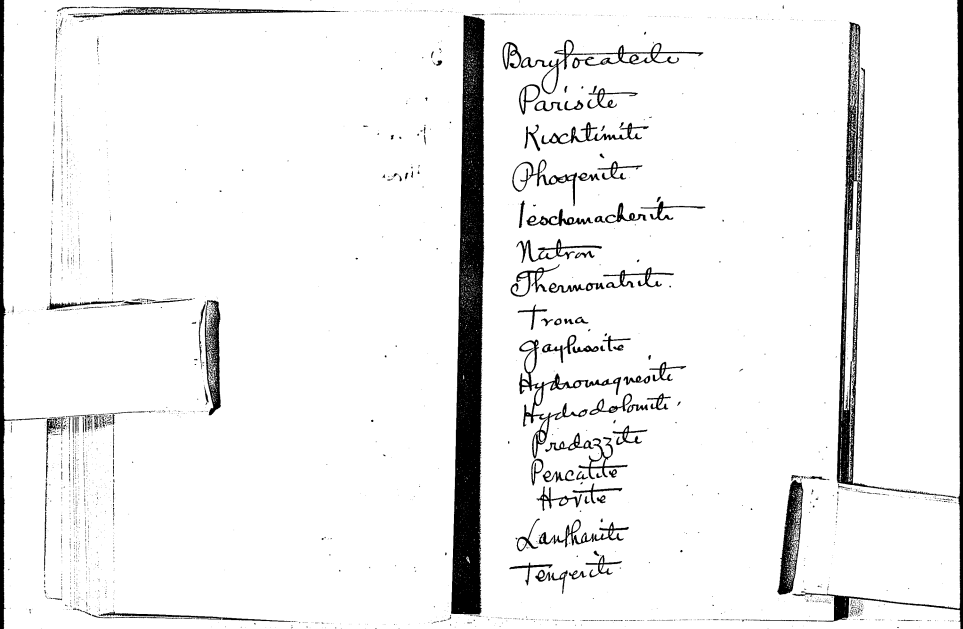
Pickeringite
Apjohnite
Boosjemannite
Halotrichite
Rozenite
Copiapite
Raimondite
Fibroferrite
Apatelite
Botryogen
Alumili
Alunite
Loewigite
Jarosite
Carphosiderite
Paraluminite
Pissophanite



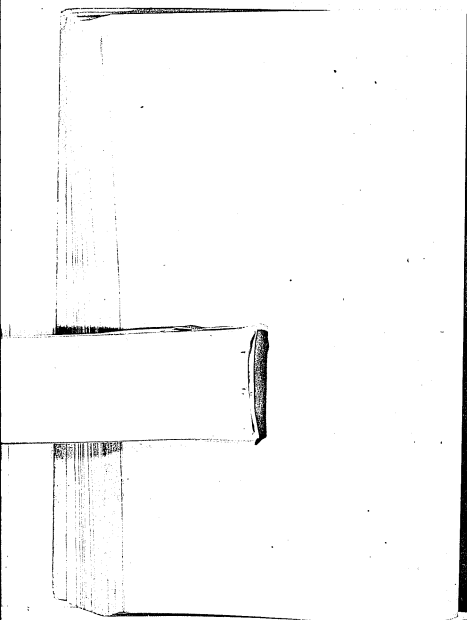
Felsobanyite
Glockerite
Lamprophanite
Linarite
Brochantite
Cyanotrichite
Johannite
Uranochalcite
Medjidite
Zippeite
Voglianite
Uraconite
Montanite
Kerstenite




Calcite
Dolomite
Ankerite
Magnesite
Mesitite
Pistomesite
Siderite
Rhodochrosite
Smithsonite
Aragonite
Manganocalcite
Witherite
Bromlite
Strontianite
Cerussite



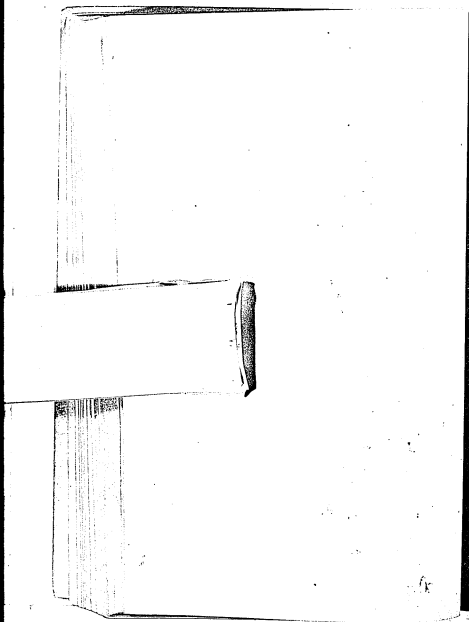
Baryfocalcite
Parisite
Kischtimite
Phosgenite
Leschenaucherite
Natron
Thermonatrite
Trona
Gaylussite
Hydromagnesite
Hydrodolomite
Predazzite
Pencatite
Hovite
Lanthanite
Tengerite



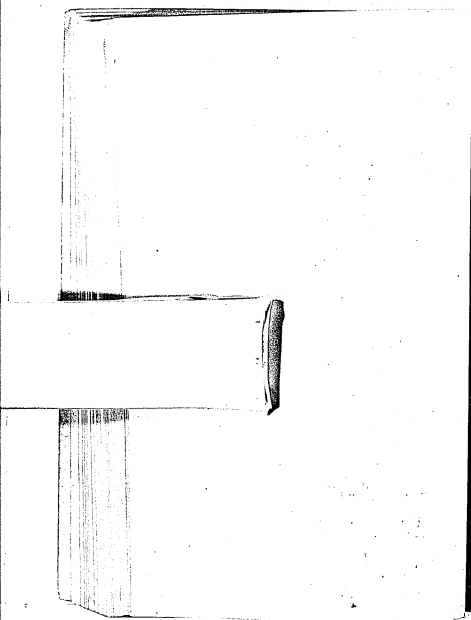
Zaratite
Remingtonite
Hydrozincite
Aurichalcite
Malachite
Azurite
Bromellite
Liebigite
~~Lab~~
Voglite

Hydrocarbon Compounds

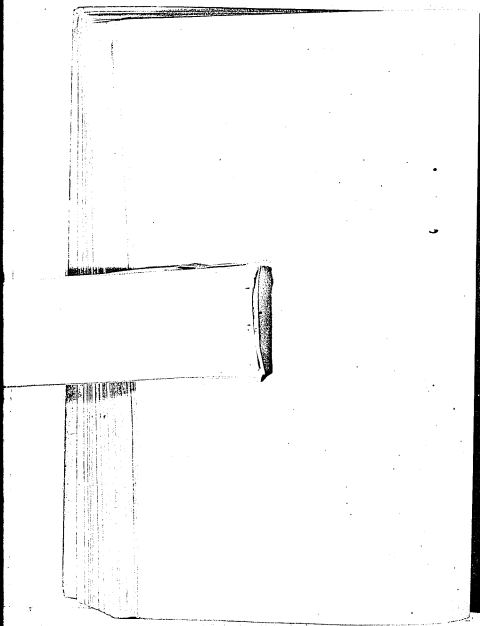
Ozocerite
Chrismatite
Urpethite
Hatchettite
Ozocerite
Zietrisikite
Elaterite
Settling Stones Resin
Fichtelite
Hartite
Dinite
Ixolyte
Geocerite
Geomyricite



Copalite
Succinite
Walchowite
Bucaramangite
Ambrite
Bathvillite
Torbanite
Xyloretinite
Leucopetrite
Euosmite
Scheretinite
Jaulingite
Pyroretinite
Reussinite
Rochlederite
Ochanite



Guyaquilite
Middlestonite
Stanekite
Anthracoxenite
Tasmanite
Dysodile
Hircite
Baikerinite
Butyrellite
Geocerellite
Bruckneverite
Succanellite
Retinellite
Dopplerite
Melanellite
Mellite
Pigolite



All kinds of Bitumen - Asphalt,
Petrolene.
Asphaltene;
Brown Coal
Torbanite.
Earthy Brown Coal
Mineral Charcoal.
Different Cannel Coals

June 1 1888

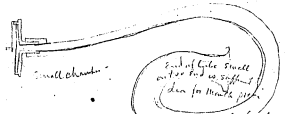
Ideas for articulation experiments and phonograph

Sheet pinned to this June 1 1888

Painted Bottling Cloth use Thick
Quick = Ditto 006 glass - 003
If I can get it — use of Shellac
films can be made that is 002 or
001 thick & I intend using them
for a receiver —

Perhaps - the Condensation waves to
different from the rarefaction waves - hence
put some weight on end of receiver lever
very sensitive & delicate arm

There need not be but a very small weight. Long stalk
to the beast - Many yokes drawn to line of long axis
I think spring mistake chained to them

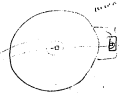


June 1 1858 –

Possibly great deal more can be recorded by
means obtaining an recording ordinal dampers –
The cord be ordinary with 1/16 inch brass water tube
through for Rod – perhaps the same the Cord should be
enclosed in a dampen through very fine hole into by wire & three
dampers the Wires of great simplicity &c –

Perhaps the abnormal big amplitude
fundamentals could be damped by
the shape of the Resonator

Very Ltd Ltr.



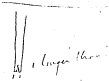

In new insulator ebonite rubber to be reduced
slightly diameter size from 3/64 to 1/32 in thickness,
use longer needle mother is most elastic.
Bakewell had a long needle wound to tension
as its 3 times slighter and far more elastic.
Part forgotten here in d. Recorder also
Quantum Sufficit –

It seems to me that the internal chamber of
the Resonator subsists mainly of sound by just
the opening of the resonator

June 1 1888

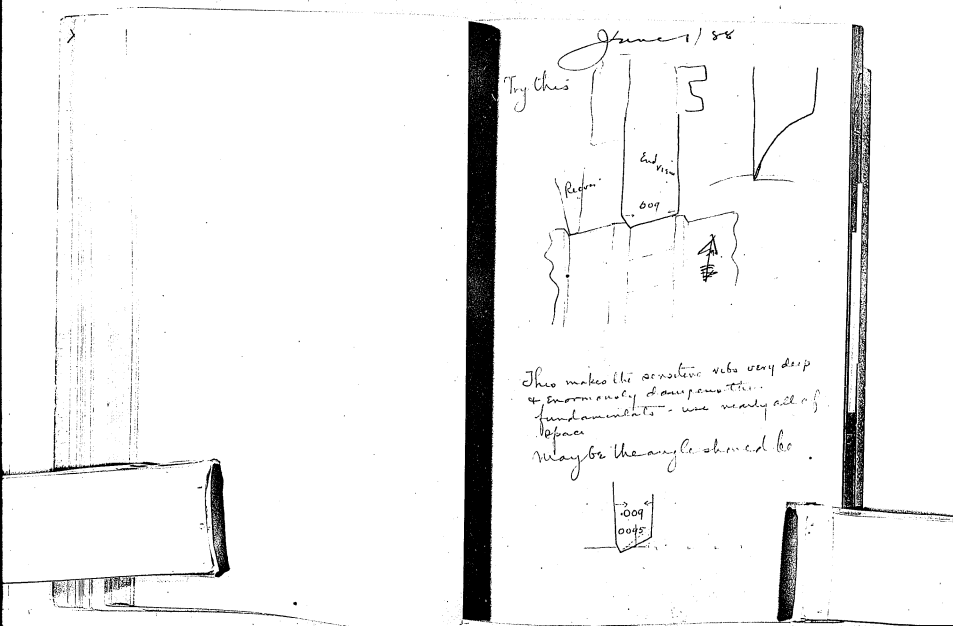
Sharpened recurdu Knife of bit to flat edge
also sharpens [illegible] and
rub over glass with Rouge on
My phosphor Bronze [illegible] Dutch
Spigelesmer – Hand operation [illegible]
Dello peritonium Forceps to get hold
agal. dello Bakewell glass knife –






June 1/88

This is probably the best form cutting point as it brings out wounds edges + diminishes slightly but its hard to manufac


J Sumner 1/58
Try this
End view
Rotor
.009
This makes the armature very deep & enormously sharp on the fundamentals - one nearly all of space
Maybe the angle shewed be
.009 of
.0045


Better Chamfer would be an Aluminum Bronze or brass Knife with sharp but buffed edge without razor edge teeth or Sapphire or Jardoomine so as to insure a perfectly smooth Cut without furrows to collect wax dirt by action of receiver —

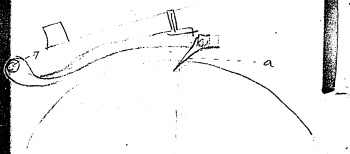
---

Claim in patent new pl and —

1 Double Recorder for Copies —
2 " " Talking Cube
3rd False shell —
4 Double (R) 2 or more shells on one axis under for new purposes
5th Belt driving —
6 pivoted pulley guides —
7 Oil cup covered in top motor shaft —
8 Belt Tightener —
9 Simultaneous raising speed of traveller and Speed
10 Final raising of traveller on telling Speed way back —
11 - Governor
12 Eccentric straight edge screw under side —
13 Removable section of traveller thread nut —
14 False bearing prevent oil under bearing off —
15 Pulley of Lower Centre —
16 Indexed governor - pulley driven —
17 Silver ~~Chuck~~, removable —
18 4 corners pole motor - details —
19 - Bracket & Knife on bow with centre of arm —
20 - Screw with head of Balloon on reverse —
21 - Centre Ways ground some centre —

22 - End nut for stopping or reversing.
23 - Magnet Control for governor
24 - Buffed Recorder Pipe or
25 - angle of Transmitter - Shaving Knife.
26 - glass cover - Recorder belt Rubber -
27 Marking box rear - also return -
28 Double Recording -
29 - Foil in shellac or silk disc -
30. Round buffed recorder point -
31 - Flexible paper cylinder -
32 - Ceresine & Gum Dammar = or Beeswax only See Progress -

Ivory cutting point.




Perhaps there is the best angle of Recorder as amplitude will then depend on speed of Wax up to Cutting point + damper Cramming the fundamentals a side hitting way of Cylinder. Too Slow — Recorder will make accompaniment dies Every point make diagram for!

June 1 88

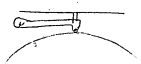
These same things can be done but theoretically not so well by as the cheap common oil hand quill break in two if too closely tapered which you can't back to great depth allowing

In new patent I show how time Reading point can be used and cylinder moved 3 times before timing by shifting position of Recorders [illegible] Turned off.

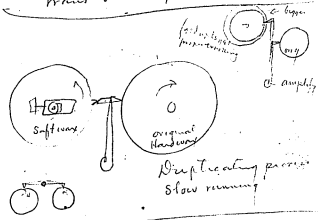
New patent - Double Acting Cylinders
1st Vac 2nd plug - 3rd Brayer pump
4 - Show salt weathering agent
5 - between the cylinder revolving
7 - Several pumps to several phenographs
8 Hydraulic pressure
9 Talking etc direction in line - CP Jnr
Cone headed
10 from very hard way cylinder itself adapt about recorders etc
11. Harden Record by Hydraulic as with Billard Balls cathedral

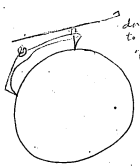
Try a wheel rewinder June 1 58
.72?

water jewells -



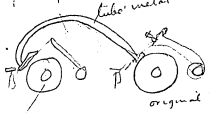
Little Cotton on chemistry of clays
Trans to clay properties



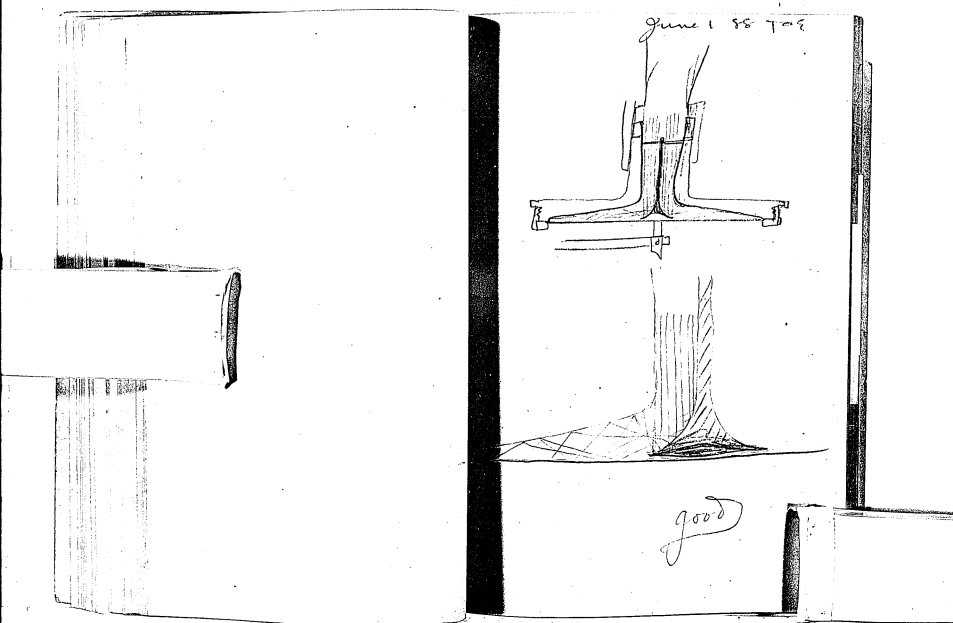
June 1 85

Mill playing -



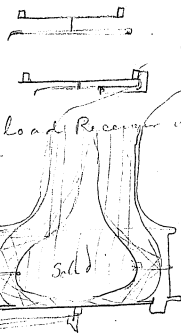

Very fine Recorder point very sensitive diaphm — Original has widest possible point Large disphragm for recording & Recorder connected with great Recording weight on it with widest Recording point so as not to Record downward vibrations, Then try to Record downward vibrations, Then try to Lowering pitch so as to get better record

Perhaps a very slight degree of nickel over surface might allow of duplication of wax thousand by process on other page of sketch

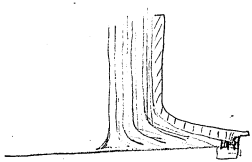

June 1 88 7-8
good

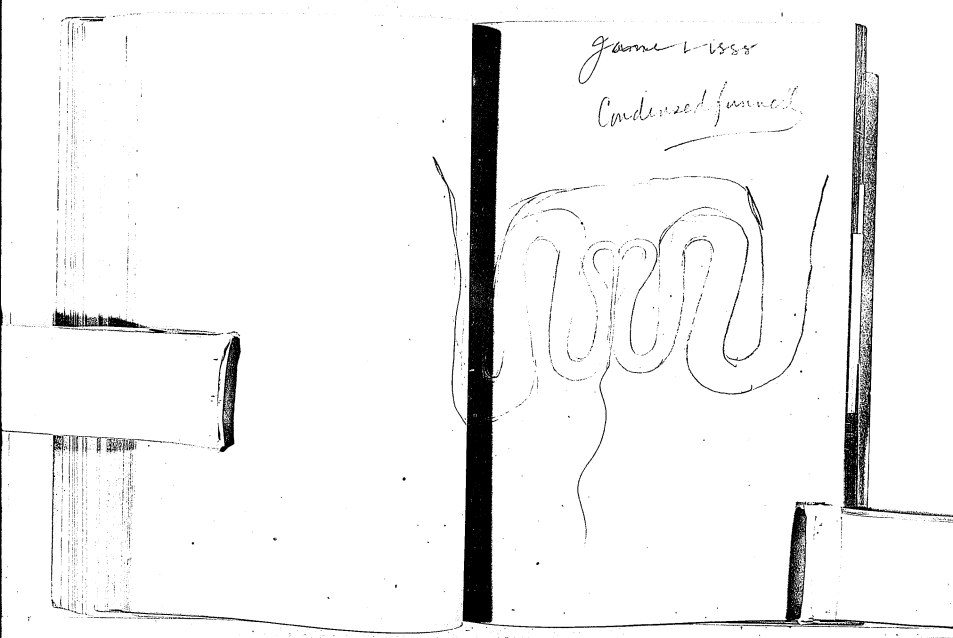
June 1 58

Initial Thermometer Em on day 2nd Reproduction
Translate Vibrations great amplitude with
one small amps gain of power.



June 1/88



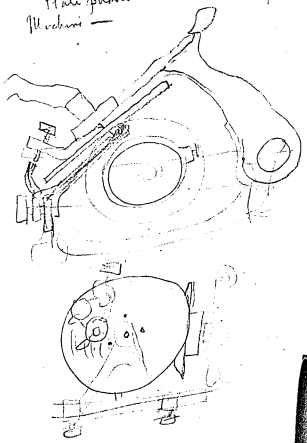

Jeanne L. Usss
Condensed Journal

June 2 1888

For buffing Lead for photograph point mix Rouge with gutta percha or Carbolsalve or glue - make pieces

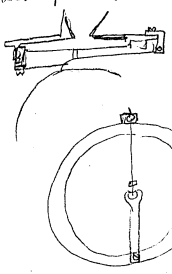
Plate shows attachment to R. guitar

Mechanism —



June 3rd 1955

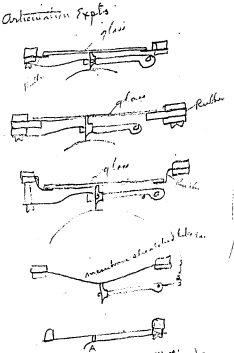
guide point for receiver.



June 3rd -1888

Ideas copied from mem May 20/88

Anticonvulsion Expts




mem
Steel .004 ⌀
.006 dia

Double
(Ground)

Record use to
Become pivot

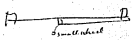
or

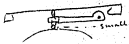
1/32 apart 2 1/2 cm
inside one limb
bottom of
other

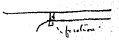
A. Bone - Steel, Unstipped -
Quartz tipped, Sapphire tipped
Rose bush - Phragmites horn
Hog Bristle - Sultanum gut
Bamboo - Bone, Glass, Platinum
Aluminum Ring - ground mercury mobile
Amber - electric and Static
Felt disc on clamp - for Cats, Isolating circle
Shellac - for Connections
Epoxi Specimen - use Bungee disc for Cross
Ring wings - Spring ; for mercury

June 3 1888

Art Sept. (Cont'd).

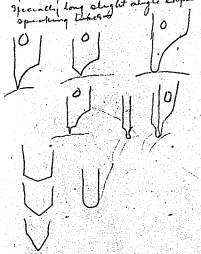


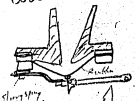


Improv. (Rubber Hand) Lock. device made adjustable & preventing Collins sparking tube. Insuring Energy from Specially low angle Angle Impact sparking Electrode

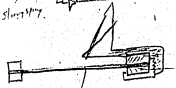


June 3rd 1884

Articulation Expts -




Rubber stretched over elements of electricity.



Thick rubber

Very thick glass

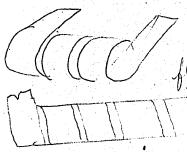
All these septa with thin + thick rubber rings + glass.

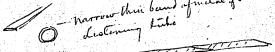
Dry Hyatt's dodge of heating article cloth between platter + pressure to make Receiving diaphragm


glass tubes to give Receiver to Mouth Chamber communication by rubber ring.

June 3rd 88 –

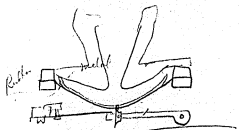
Insert in Speaking tube or transmitter
side tube adjustable to by experiment
also open fine gauze cloth strip over
rubber to stop vibrations



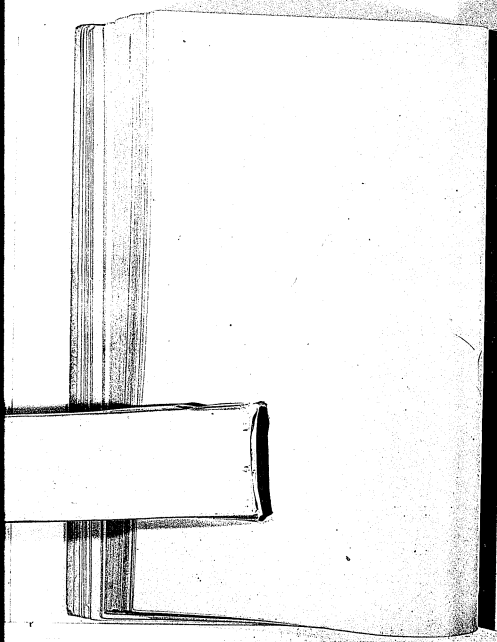

also Lap principle


Try .006 glass plate
Rheem 32 Rubber rings
for Reproducer




List of diaphragm materials
for Transmitters + Receivers

Sheet Shellac
Hard Rubber
Sheet Sulphur
Phosphide of Iron
Melted Sheet. Orpiment
Melted Asphaltene poured in sheet.
Carbonized paper - Laundry asphaltum, pinhead 1/2
Porcelain
Hardest toughest shellproof glass
.004 matched .006.
Ivory
Horn
Cow Mexland Spain to get new sheets
Hardened Steel
Plated Sheet nickel, steel &
formed by plating electrically



All the Resins poured in sheets after melting = do grams

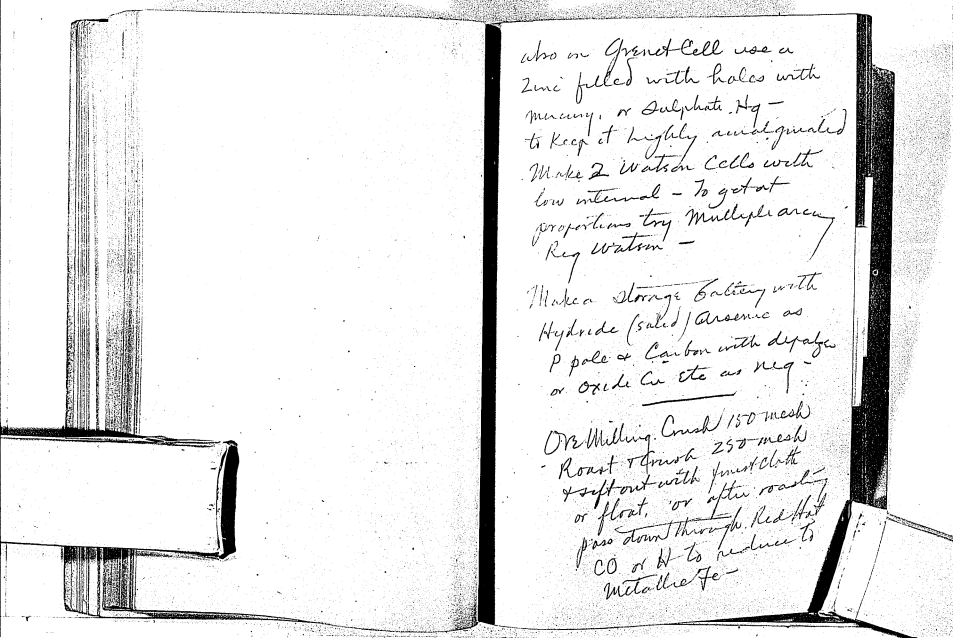
June 16 1888 TAS

In Watts Dic under Mercury are amalgams – The Copper Hg Amalgam used by Paris Dentists to plaster when powdered & kneaded but hardens & can again be made plastic by powdering & kneading

Try plumb Cylinder rubbed to wax paper the Conical,

For Battery for plumb

Try Copper troughs one filled with Hydride Copper oxide with Oxide Copper = or if this don't work see if Hydride is a Carbuld if so put on porous cells Pure Copper pole

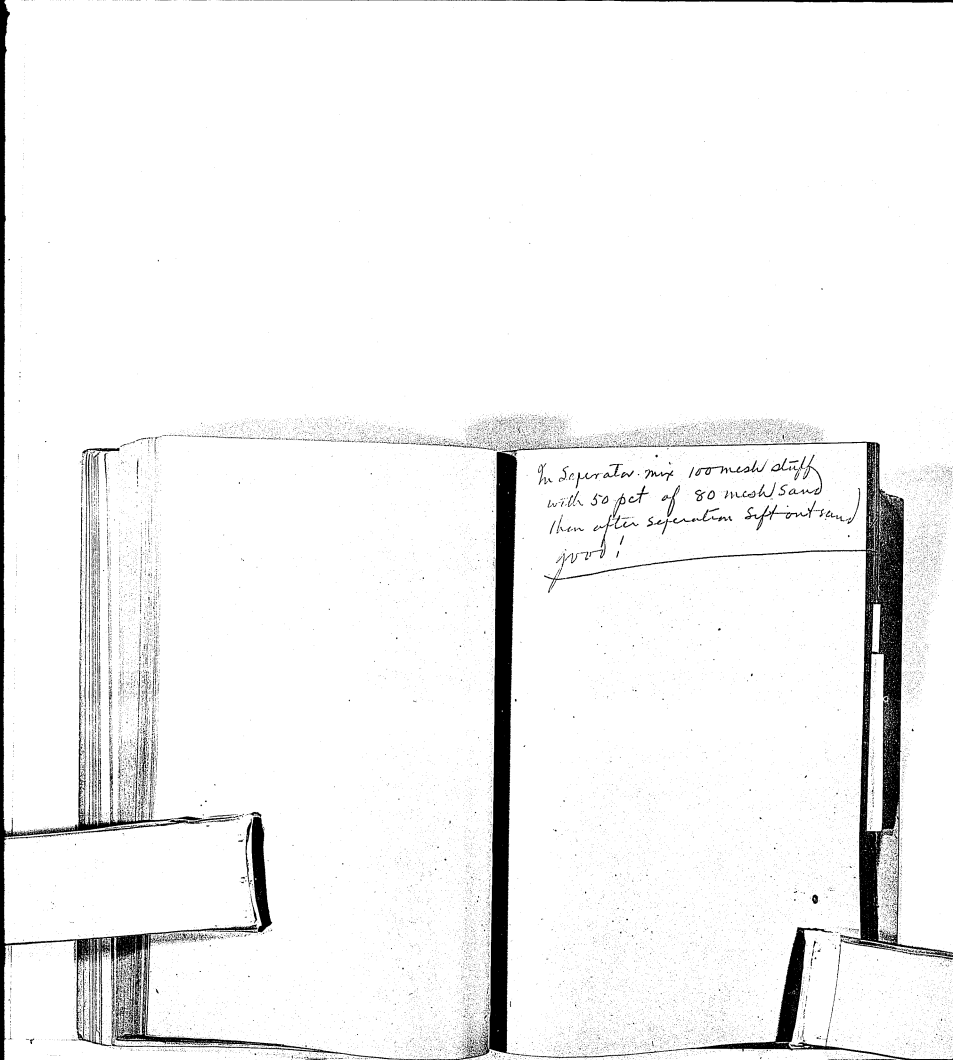


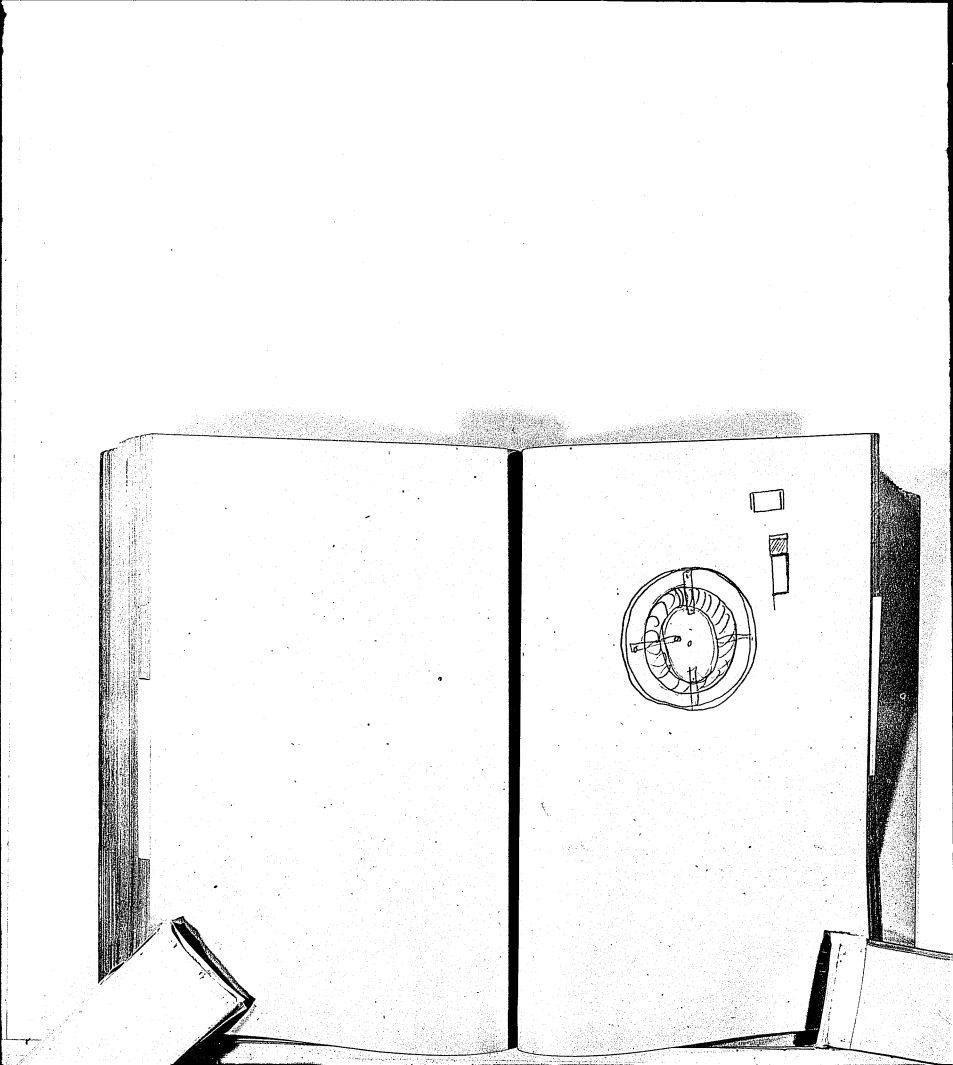
also on Grenet Cell use a
Zinc filled with holes with
mercury, or Sulphate Hg —
to keep it highly amalgamated
Make 2 Watson Cells with
low internal — To get at
proportions try Multiple arcing
Reg Watson —

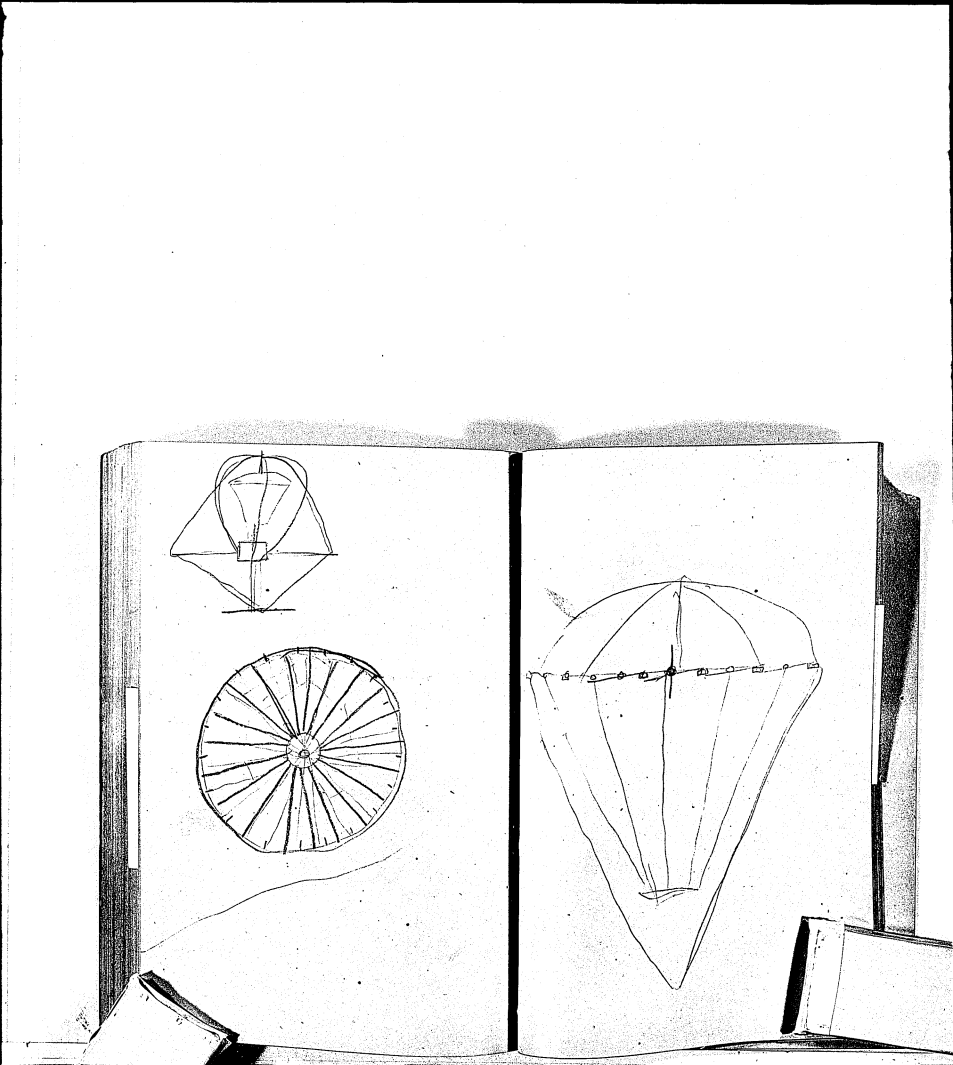
Make a storage battery with
Hydride (salt) Arsenic as
P pole & Carbon with depolar
or Oxide Cu etc as neg —

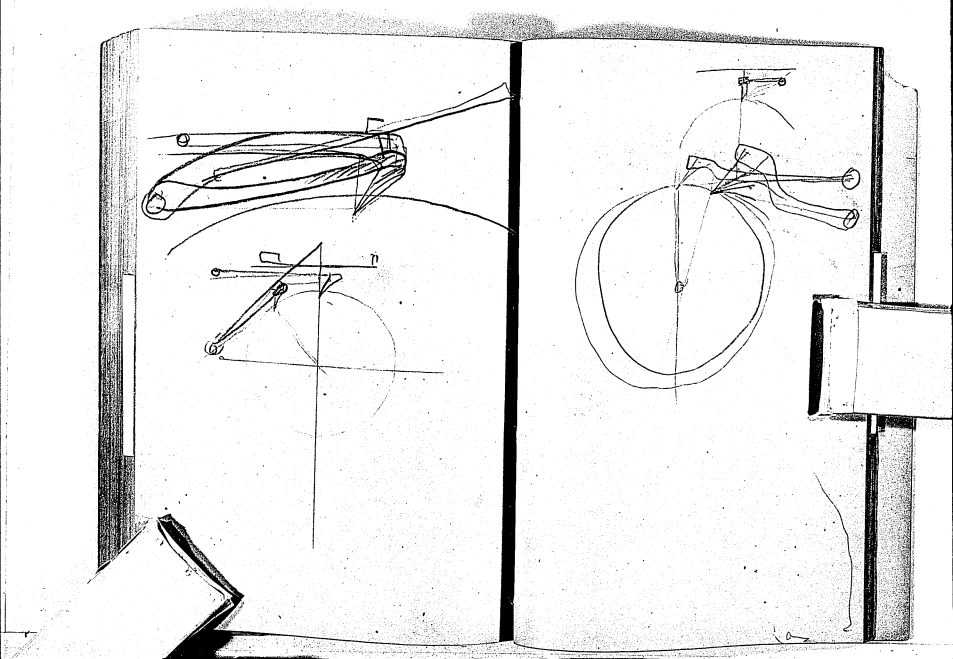
---

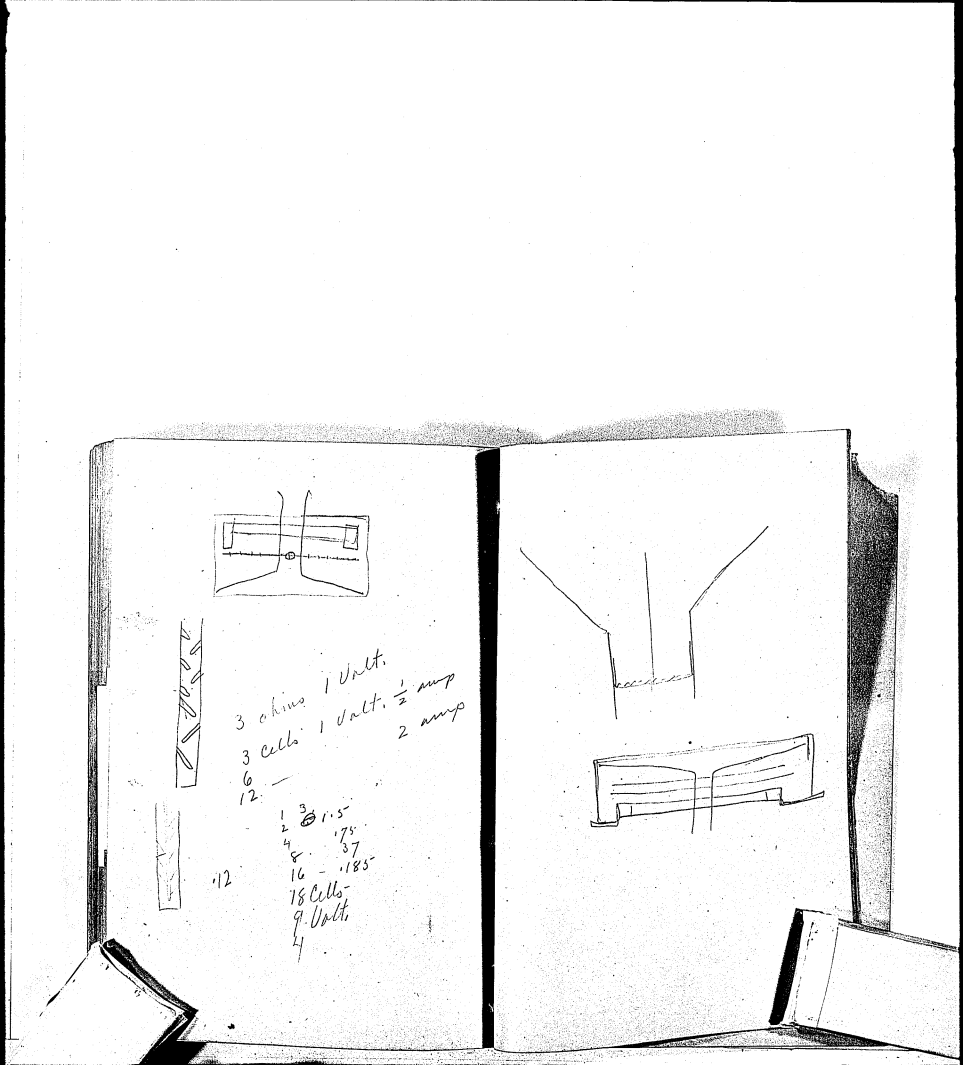
Ore Milling. Crush 150 mesh
- Roast & Grind 250 mesh
& sift out with fine cloth
or float, or after roasting
pass down through Red Hot
CO or H to reduce to
Metallic Fe —

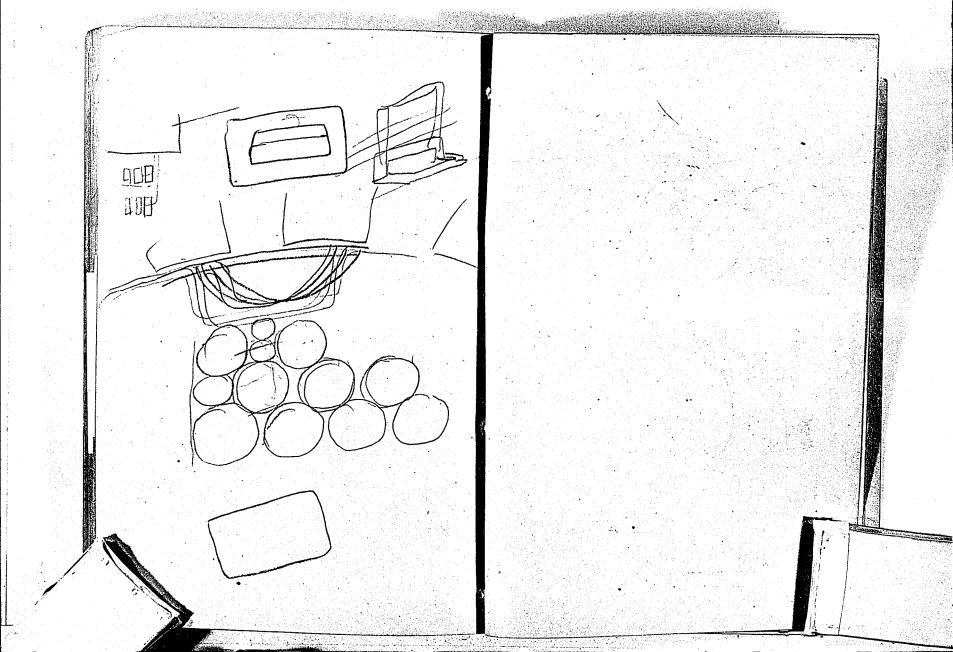

In Separator mix 100 mesh stuff
with 50 pct of 80 mesh Sand
then after separation Sift out sand
good!

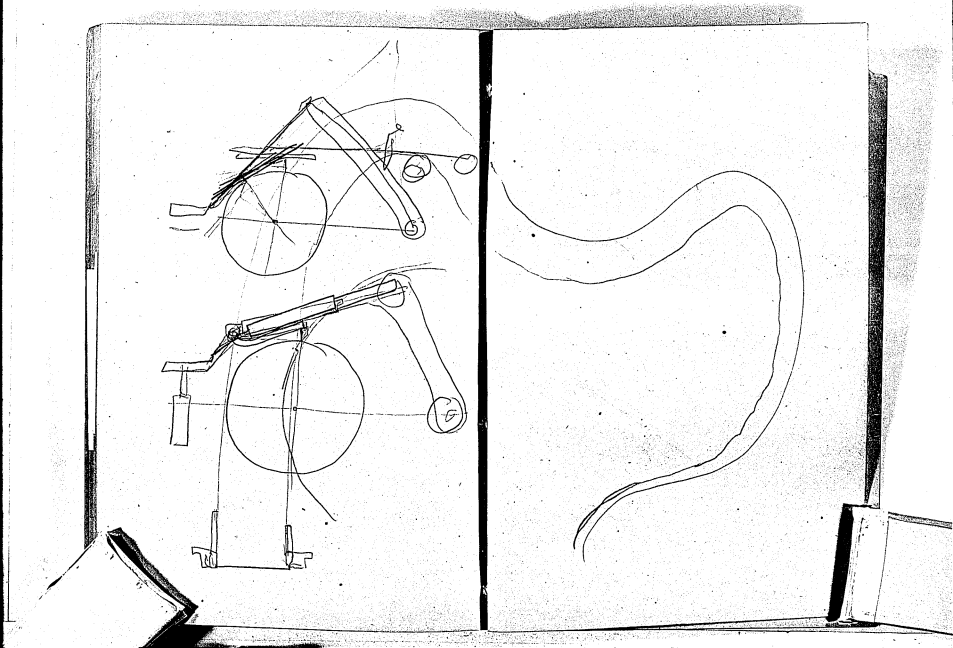


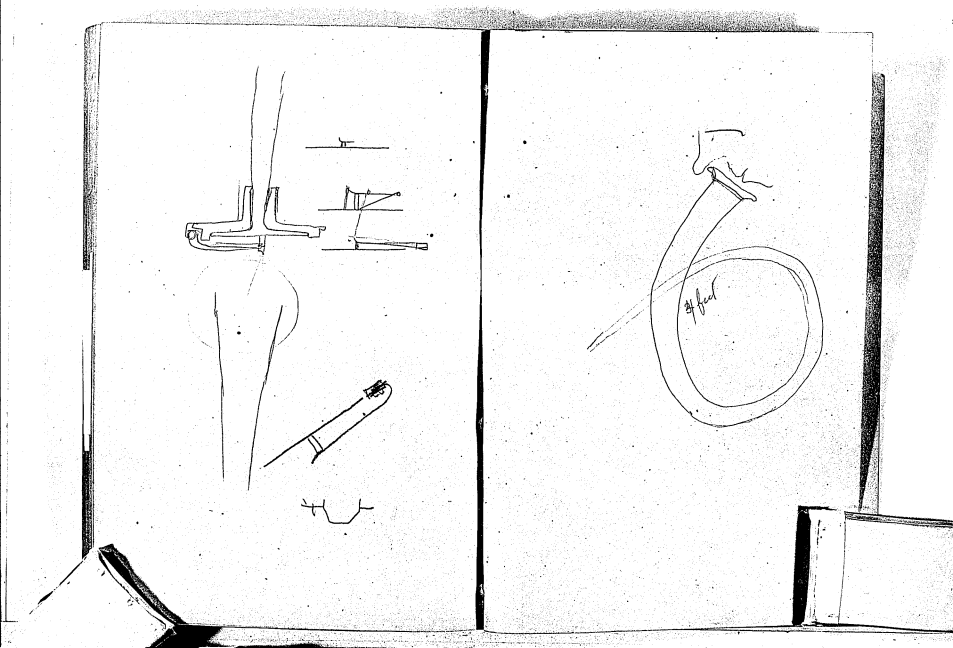


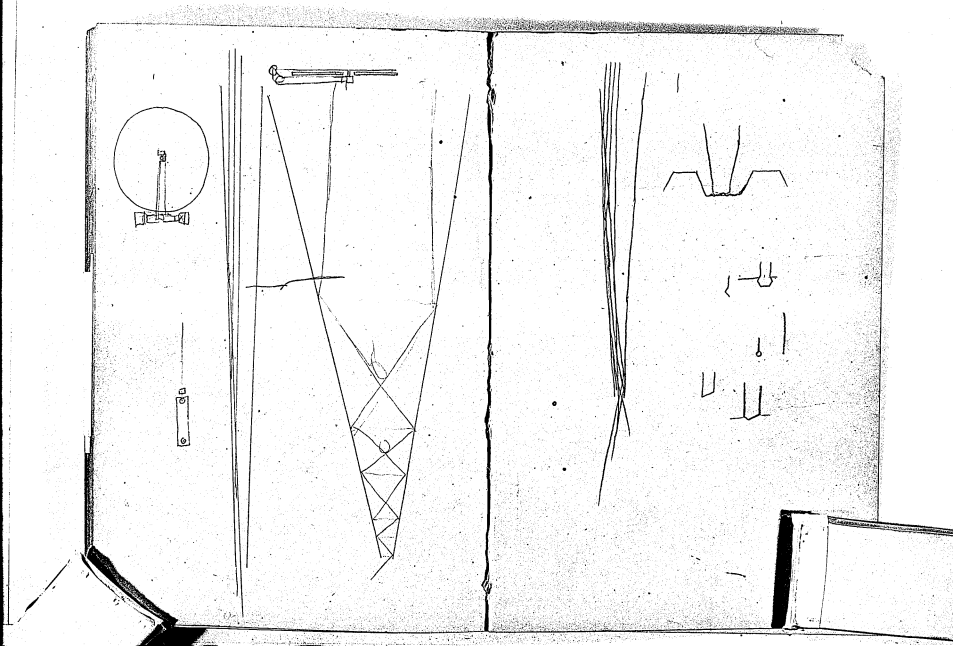



3 ohms 1 Volt.
3 cells 1 Volt. ½ amp
2 amp
6
12.
1 3 1.5
2
4 .75
8 .37
16 .185
.12
18 Cells
9 Volts
4









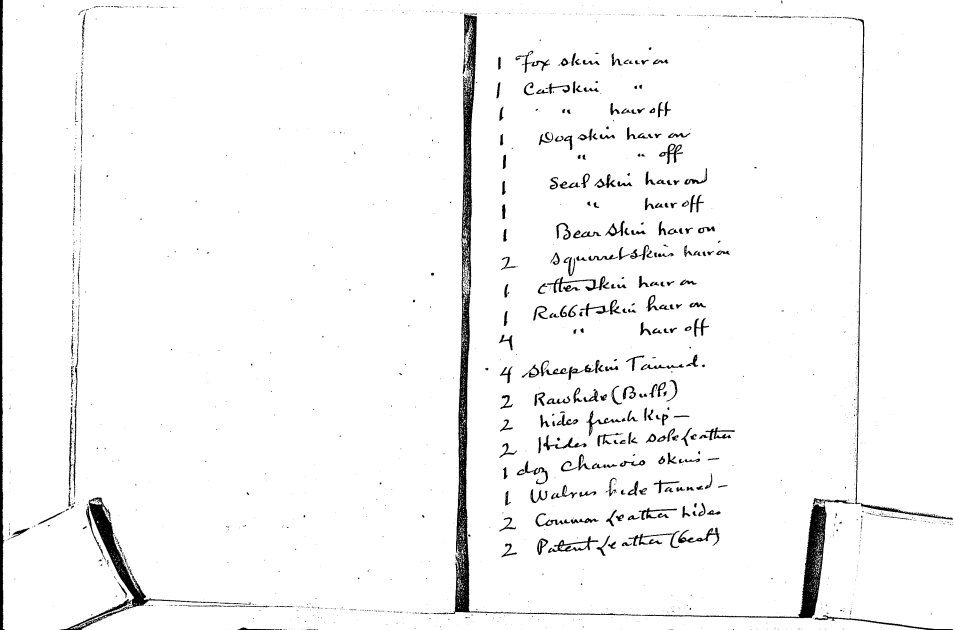
**Notebook, N-88-06-01.2**

This notebook contains dated entries from 1888 and 1889. All entries are by Edison. At the beginning of the book is a 20-page list of items wanted for the laboratory. The following pages contain undated drawings relating primarily to phonographs and dynamos. Also included are a page labeled "Caveat Dec 7 [1888]," pertaining to an unidentified technology; a partial floor plan, possibly for the phonograph works; some notes on chemical experiments; and notes and drawings for a municipal lighting system, labeled "Caveat May 23 89." Near the end of the book is a memo regarding the acquisition of some catalogs. The pages are unnumbered, and at least one page has been removed from the back of the book. Approximately 160 pages have been used.

XE172 N8 10601.V

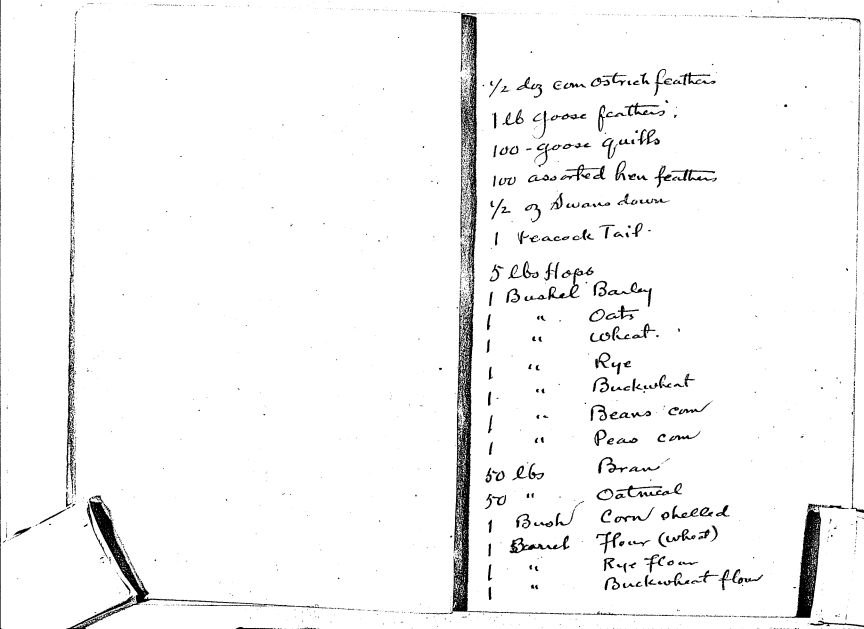
Following articles are wanted for the Laboratory — Put prices opposite Each article —

| | | |
|---|---|---|
| 2 | lbs | Horse Tail hair |
| 2 | " | Hogs bristles long. |
| 5 | " | Cows hair |
| 2 | " | Rabbit hair used by felthat mfrs |
| 1 | " | Casimere Goat |
| 10 | " | Best Sheeps wool |
| 1 | oz | Mink hair |
| 2 | oz | Human hair long female |
| 4 | oz | Porcupine Quills assorted |
| 1 | oz | Camels hair fine |
| 1 | oz | " " coarse |
| 1 | | Mink skin hair on |
| 1 | | Coon skin hair on |
| 1 | | Deerskin hair on |
| 1 | | " hair off |
| 1 | | Sable skin hair on |



1 Fox skin hair on
1 Cat skin "
1 " hair off
1 Dog skin hair on
1 " " off
1 Seal skin hair on
1 " hair off
1 Bear Skin hair on
2 Squirrel skins hair on
1 Otter skin hair on
1 Rabbit skin hair on
4 " hair off

4 Sheep skin Tanned.
2 Rawhide (Bulls)
2 hides french Kip —
2 Hides thick sole leather
1 doz Chamois skins —
1 Walrus hide tanned —
2 Common leather hides
2 Patent leather (Calf)



½ doz com Ostrich feathers
1 lb Goose feathers.
100 - Goose Quills
100 assorted hen feathers
½ oz Swans down
1 Peacock Tail.

5 lbs Hops
1 Bushel Barley
1 " Oats
1 " Wheat.
1 " Rye
1 " Buckwheat
1 " Beans com
1 " Peas com
50 lbs Bran
50 " Oatmeal
1 Bush Corn shelled
1 Barrel Flour (wheat)
1 " Rye flour
1 " Buckwheat flour

one bag Corn meal,
50 lbs Rice,

5 lbs Assorted Ivory
Veneers, & pieces.
1 doz Walrus tusk
1 doz Buffs horns
1 Deer horn
2 oz Sharks teeth
1/2 doz small Tortoise shells
1/2 " Common turtle shells
1 Large Turtle shell.
50 lbs Horses hoofs
50 " Cows "

6 Spools White Sewing silk from each
size from largest to finest —

2 lbs Unspun white silk reeled
on bobbins —
2 bobbins of silk just as it comes
from the Cocoon —

6 Spools each finest to Coarsest Cotton Sewing Thread —.

6 Spools each finest to Coarsest Linen Thread —

2 lbs Worsted skeins assorted sizes (white)

1 lb shoemakers wax —

1 lb " Cord.

6 Balls each finest to Coarsest Cotton twine

6 Balls each finest to " Linen twine —

6 Balls each Manilla as above.

25 lbs Marlin

50 fish-lines assorted sizes

50 lbs Clothes Line —

2 lbs Best Book ink (Printers)

10 lbs Common printers Ink

1 lb Each. Every Color printers Ink

6 one quart bottle best
black writing ink
2 one quart bottles best black
Copying ink
1 pint bottle Red writing ink,
15 Boxes Tin assorted sizes
25 lbs Pewter,
50 " White metal,
200 " Best Babbit metal,
2 bbls Brass Moulders Sand
3 Brass Moulders flasks
25 lbs Eddys Lamp Black.
500 lbs Assorted slate
50 lbs pumice stone 10 lbs powdered Gal lump
10 " Lava
~~5 " Rotten stone powder~~ ordered Dec 1882
2 bbls Linseed oil best Boiled
1 " " not Boiled
1 " Cotton seed oil.
20 lbs flax seed

20 lbs Best Spanish Licorice
2 Lithograph stones 10 x 20
25 lbs Best Lard pure -
1 Box Common Soap
10 lbs Castile Soap -
3 lbs Common Assorted Meerschaum
5 lbs every size clear mica,
100 lbs powdered Mica
100 lbs Lump Mica as it comes from Mines -
1 66# White Sugar
100 lbs fine powdered Sugar
20 lbs Caramel
50 lbs Glucose
50 lbs gum Dextrin
50 lbs Cork Slabs best.

3 gross corks ⅛ dia 3 gross ¼ dia
3 gross ½ inch dia 3 gross ⅝
3 gross ¾ — 3 gross 1 inch
one half of above short, the other half
long — 1 gross 1¼ 1 gross 1½
1 gross 2 -

Emery

10 lbs each Grade. Russell Brown

20 40 50 80 100 mesh

5 lbs fine (B) dust

50 lbs Best Sea Island Cotton

50 lbs Upland Cotton

10 Rolls Best Cotton Batting

50 lbs Cryolite

10. watch small diamonds

20 " small Black diamond

20. diamond dust for polishing

150 lbs Lignum Vitie. Board + Block from W & W

500 feet Light Mahogany Lumber

Clear — 1 inch

1000 feet Black walnut Lumber

one inch -

500 feet Black walnut Lumber 1/2 inch

100 feet Curly Maple Board inch thick

100 " Hickory " "

150 " Oak " "

500 " Cherry " "

1 5" wath each of following Veneers —.
Curled Maple —
Rosewood —
Mahogany -
20. Ebony log —
10. Dog wood log -
50. Box wood log -
5. wath Gold Beaters Skin
25 lbs sheet Gutta percha 1/4 inch thick
20 " " " 1/8
3 " Gutta percha tissue
5 lbs White purified Stick,
4 66lbs Portland Cement Cask.
2 " Rosendale " "
2 " Bbls Tar wood (North Carolina)
2 " " Coal Tar
2 " Best Rosin
1 " Pitch
1 " Turpentine
2 66lbs Pratts Neatsfoot oil.
1 66lbs Pratts Astrial Oil
1 Large Can Pratts Astrial Oil

1 66l 105 flash Kerosene
2 66ls Crude petroleum
150 lbs paraffine
1 66l prime Cubian asphalt
1 " Hard "
1 " Soft Mexican "
1 " Hard " "
2 " Trinadad purified -
2 " " Crude
20 galls Rhigolene (petroleum Ether) in tin cans
1 box Stearine Candles
20 lbs white Wax -
25 " Beeswax
10 gal Camphene -
20 lbs Dupons Electrotypers plumbago
1 66l Common plumbago powdered - See Tab.
1 doz Cocoanuts
2 - lbs Ivory Nuts

25 lbs Transparent Celluloid
sheet $\frac{1}{4}$ inch thick
20 lbs $\frac{1}{8}$ "
10 - $\frac{1}{16}$ "
3 - $\frac{1}{32}$ "
1 - $\frac{1}{64}$ "

Celluloid Rod

25 lbs ~~1 inch~~ $1\frac{1}{2}$ thick Transparent
20 1 "
15 $\frac{3}{4}$ "
10 $\frac{1}{2}$ "
5 $\frac{1}{4}$ "
2 $\frac{1}{8}$ "
1 $\frac{1}{16}$ "

Vulcanized fibre —

| | |
|---|---|
| 100 lbs. | 3/4 inch thick sheet |
| 100 " | 1/2 " " |
| 50 " | 1/4 " |
| 100 | 1/8 |
| 50 | 1/16 |
| 20 | 1/32 |

Common Straw board paper

| | |
|---|---|
| 100 lbs | 1/4 thick |
| 100 " | 3/16 " |
| 100 | 1/8 |
| 100 | 3/32 |
| 100 | 1/16 |

Card board 3 ply

| | |
|---|---|
| 100 lbs | 1/4 inch |
| 50 " | 1/8 |
| 20 | 1/16 — |

50 lbs Bristol Board hard
Cotton dried 3 ply
20 lbs 2 "
20 " single -

50 lbs Manilla CardBoard hard
1/32 thick of pasteboard -
20 lbs 1/64 ——

100 lbs good book paper
100 " good newspaper (wood)
25 - lbs thick white blotting paper
50 lbs Common thin white tissues
50 " Best thin "
20 " Best thick "
50 lbs Common soft Manilla
5 lbs Japanese Bamboo paper
assorted

Allow 6 al note sheets space —

66 l Lignite Coal
" peat Coal
" Cumberland gas coal

Window glass –

Best american –

box of each size window glass
up to 16 x 24 –

1 piece common print cloth
1 " Cheese cloth
1 " Heavy Cotton
1 " Canvass
1 " Heavy Duck
1 " White wool cloth thin
1 " " " thick
1 " gauze cloth –
5 lbs assorted cowhairbone
10 lbs Bleached Bones
10 lbs four uncut Mother pearl
2 lbs best Veneers unpolished
50 lbs Tin foil – 20/1000
50 " " 15/1000
50 " " 10/1000
50 " " 5/1000
50 " " 3/1000

20 lbs Lead foil .004
20 lbs pure tin — foil .004

1000 feet flexible Electric light cord
Emac wire $\frac{1}{3}$ rd to carry 20 amperes
— to carry 10 amperes
$\frac{1}{3}$ orbal to carry 5 amperes —

5 lbs piano forte steel wire assorted sizes. 9 assorted

pair Jewellers Rolls —

Battery Carbons —

| | | | |
|---|---|---|---|
| 2 doz | 3 long | 2 wide | $\frac{1}{4}$ thick |
| " | $3\frac{1}{4}$ | $2\frac{1}{2}$ | $\frac{1}{4}$ |
| " | 4 | $9\frac{1}{16}$ | $\frac{5}{16}$ |
| " | $5\frac{3}{4}$ | $1\frac{5}{8}$ | $\frac{5}{16}$ |
| " | 6 | 3 | $\frac{1}{2}$ |
| " | 6 | 4 | $\frac{1}{2}$ |
| " | 8 | 2 | $\frac{1}{4}$ |
| " | 9 | 6 | $\frac{1}{4}$ |
| " | 11 | 6 | $\frac{1}{4}$ |
| One doz | 12 | 12 | $\frac{7}{8}$ |

Brass Castings —
Machine cuts can make —

Rod —

| | | | |
|---|---|---|---|
| 6 | Rods | 3 inch dia | 12 inch long |
| | " | 2 1/2 " | " |
| | | 2 " | " |
| 10 | — | 1 3/4 " | " |
| 12 | | 1 1/2 " | " |
| 15 | — | 1 1/4 " | " |
| 20 | — | 1 " | " |

Brass plates.

| | | | |
|---|---|---|---|
| 3 | plates | 12 inch dia. | 7/8 thick |
| | " | " | 3/4 " |
| | " | " | 5/8 " |
| | " | " | 3/8 |
| 3 | plates | 10 inch dia | 7/8 |
| | " | " | 3/4 |
| | " | " | 5/8 |
| | " | " | 1/4 |
| 3 | plates | 8 " | 7/8 |
| | " | " | 3/4 |
| | " | " | 5/8 |
| | " | " | 3/8 |

| | | |
|---|---|---|
| 3 plates | 7 inch dia. | 7/8 thick |
| " | " | 3/4 |
| " | " | 1/2 |
| " | " | 3/8 |
| 3 plates | 6 " | 7/8 |
| " | " | 3/4 |
| " | " | 1/2 |
| " | " | 3/8 |
| 3 plates | 5 " | 7/8 |
| " | " | 3/4 |
| " | " | 1/2 |
| " | " | 3/8 |
| 6 " | 4 " | 7/8 |
| " | " | 3/4 |
| " | " | 1/2 |
| " | " | 3/8 |
| 6 plates | 3 inch dia | 7/8 |
| " | | 3/4 |
| " | | 1/2 |
| " | | 3/8 |
| 12 plates | 2 inch dia | 7/8 |
| " | | 3/4 |
| " | | 1/2 |
| " | | 3/8 |

Same ordered Duplicated
Cut square plates —

Same order for 6 ath rod +
plates in Cast iron

Same order for 6 ath rod + plate
in Zinc.

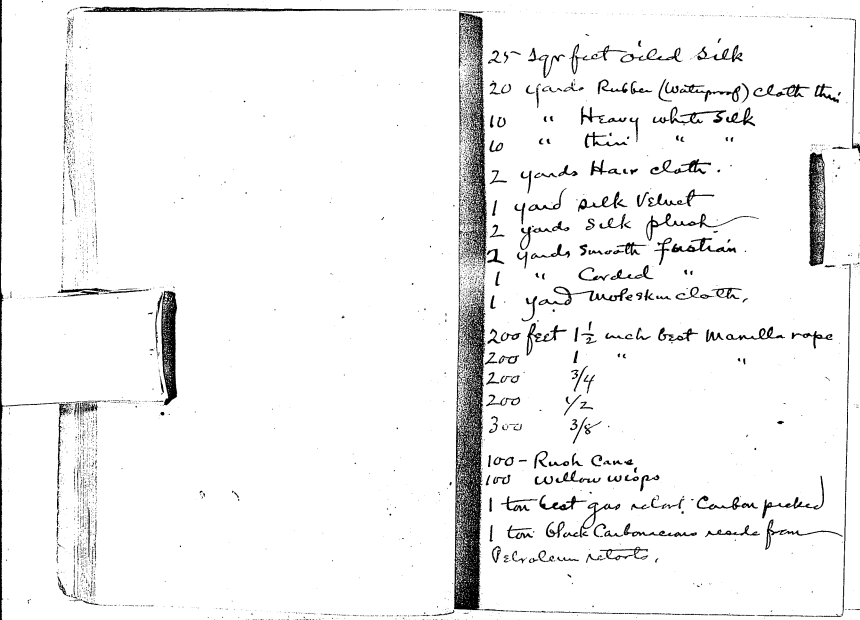
---

Fire brick slabs, sheets.

12 sheets 1/8 thick 8 inches square
12 " 1/4 " 8 "
12 " 3/8 " 10 "
12 " 1/2 " 12 "
12 " 3/4 " 14 "
12 " 1 " 18 "

2000 fire brick —

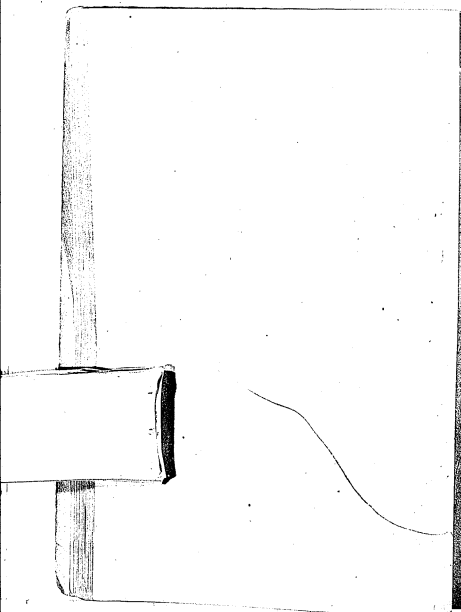
1 box Macaroni
2 Rolls smooth oil cloth hard
2 " " flexible soft —



25 Sqr feet oiled Silk
20 yards Rubber (Waterproof) cloth thin
10 " Heavy white Silk
10 " thin " "
2 yards Hair cloth.
1 yard Silk Velvet
2 yards Silk plush
2 yards smooth fustian.
1 " Corded "
1 yard Mofeskin cloth,

200 feet 1½ inch best Manilla rope
200 1 " "
200 3/4
200 1/2
300 3/8

100 - Rush Cane,
100 Willow wisps
1 ton best gas retort Cannel picked
1 ton Black Carbonaceous residue from
Petroleum retorts,



3 sheets each each kind Colored glass — large size sheets say 16 X 24

1 Eggbeater ~~Russell Errow Ord~~

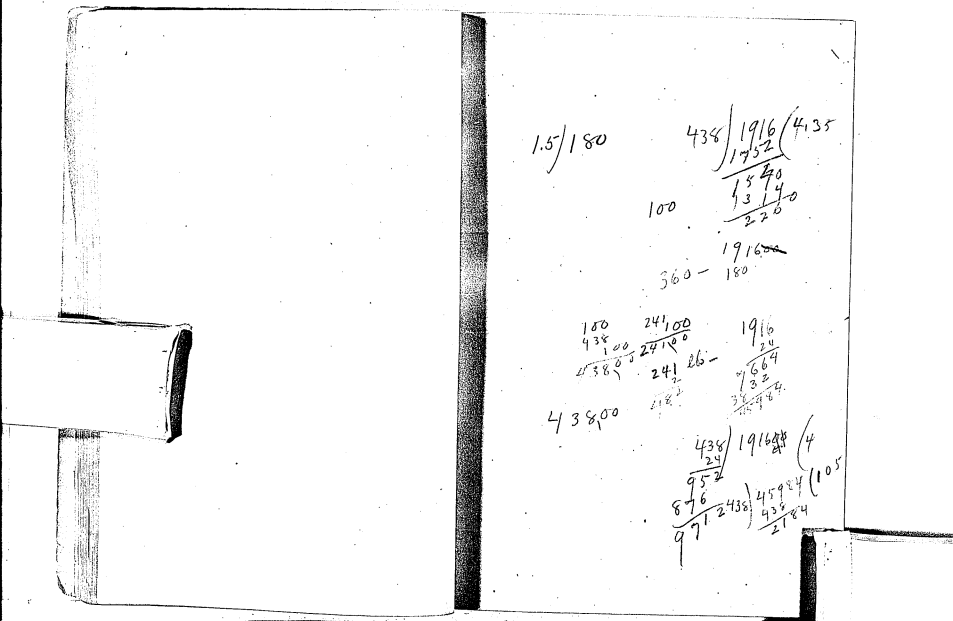
1 power mixer for Chemicals with Muffler — We have it in barn First used it for Carbon

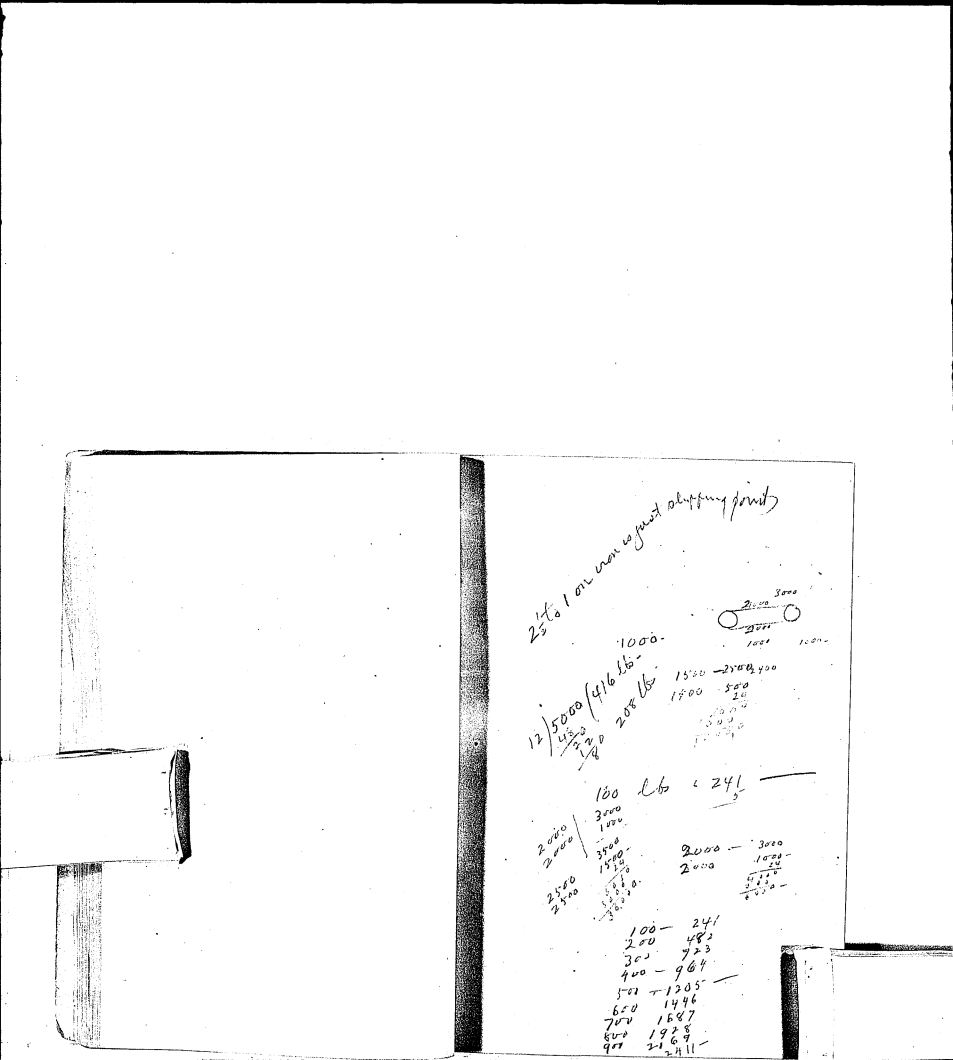
1 Bagaduce Mill for fine grinding agate plate

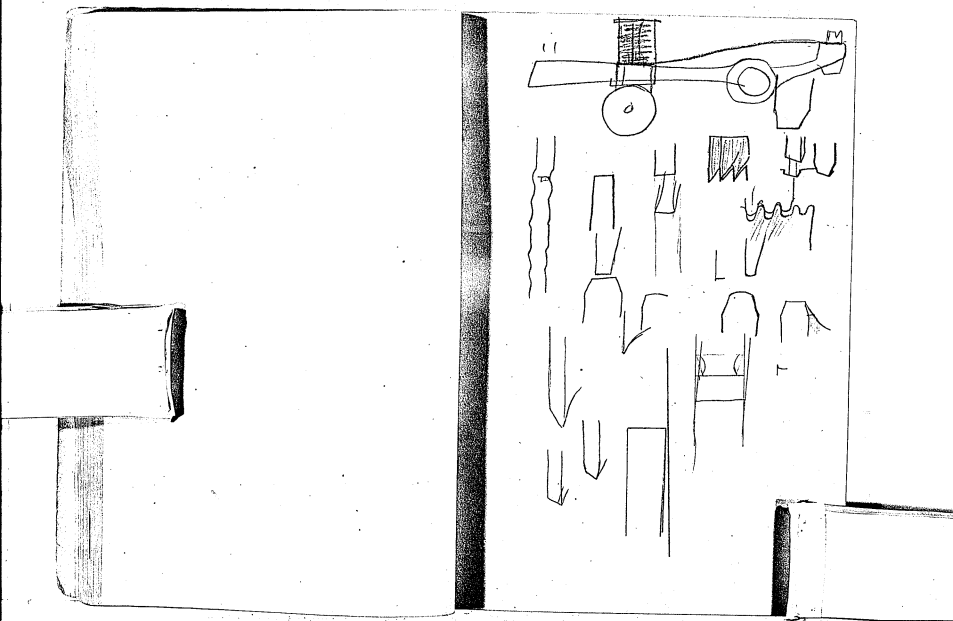
50 worth slate in slabs thin & thick for pyromountation etc,

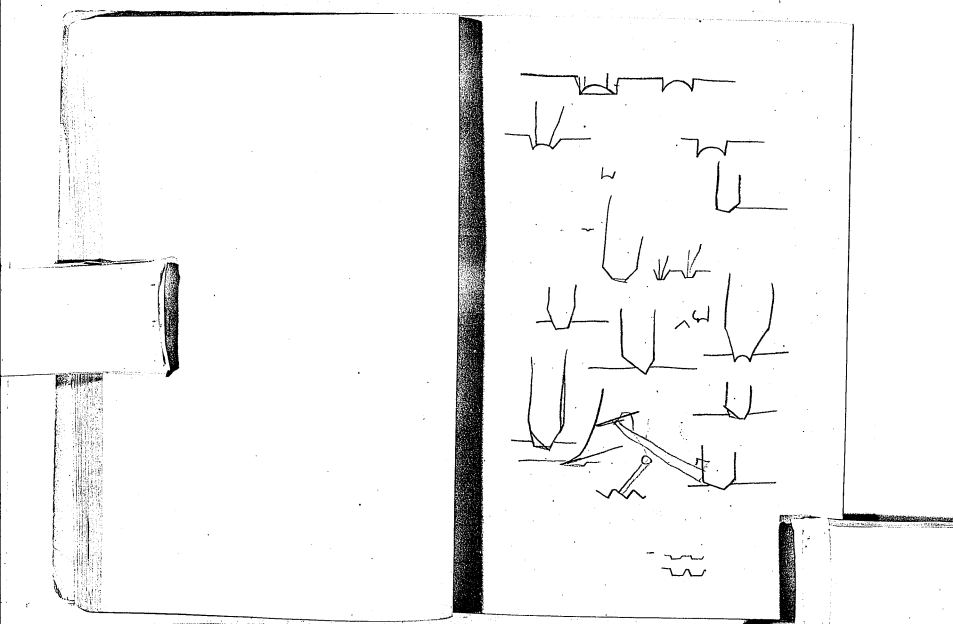
Supply Sapphire for draw plates etc

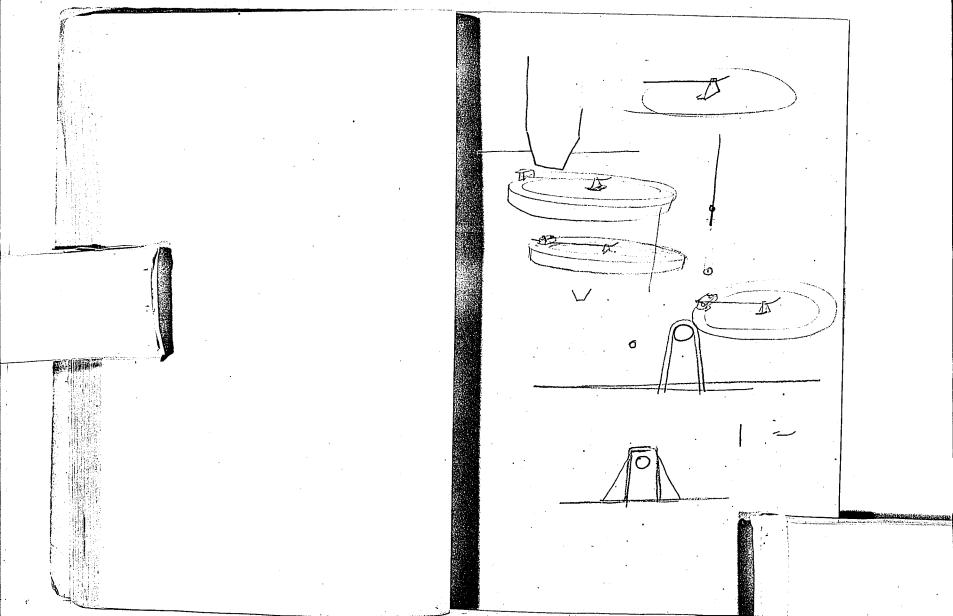
50 lbs Ozokorite

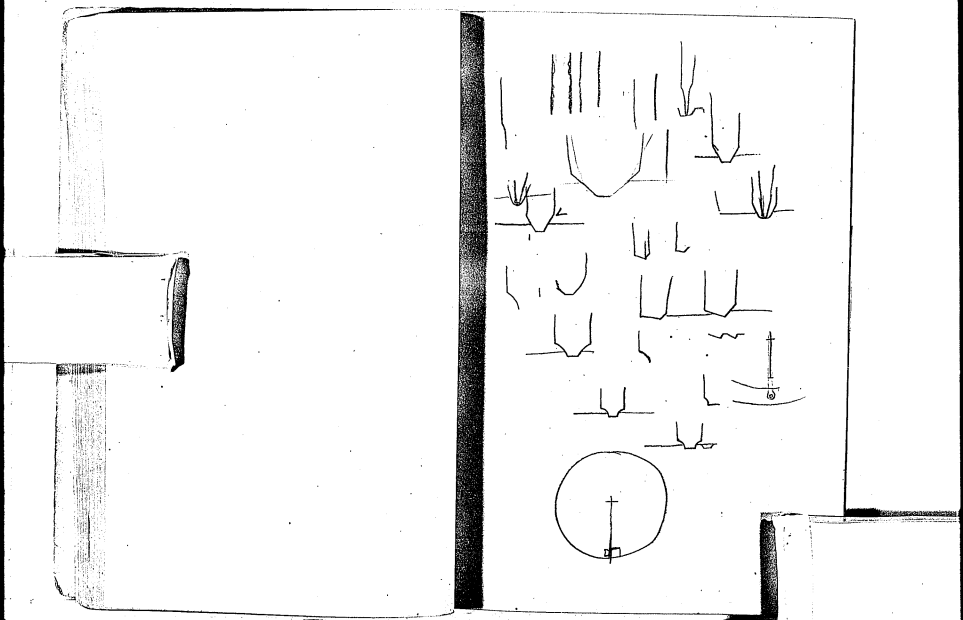












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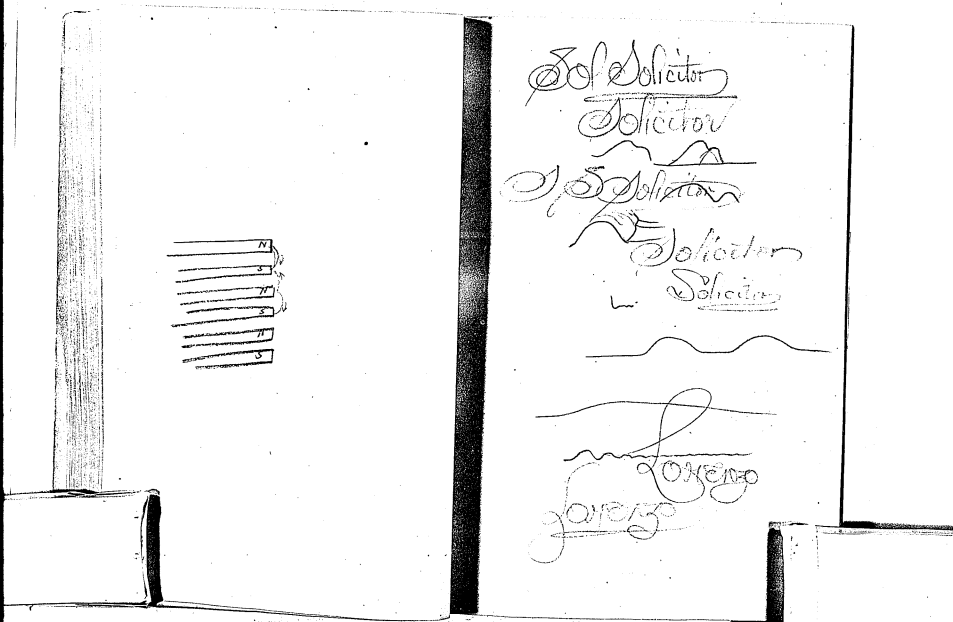
N
S
N
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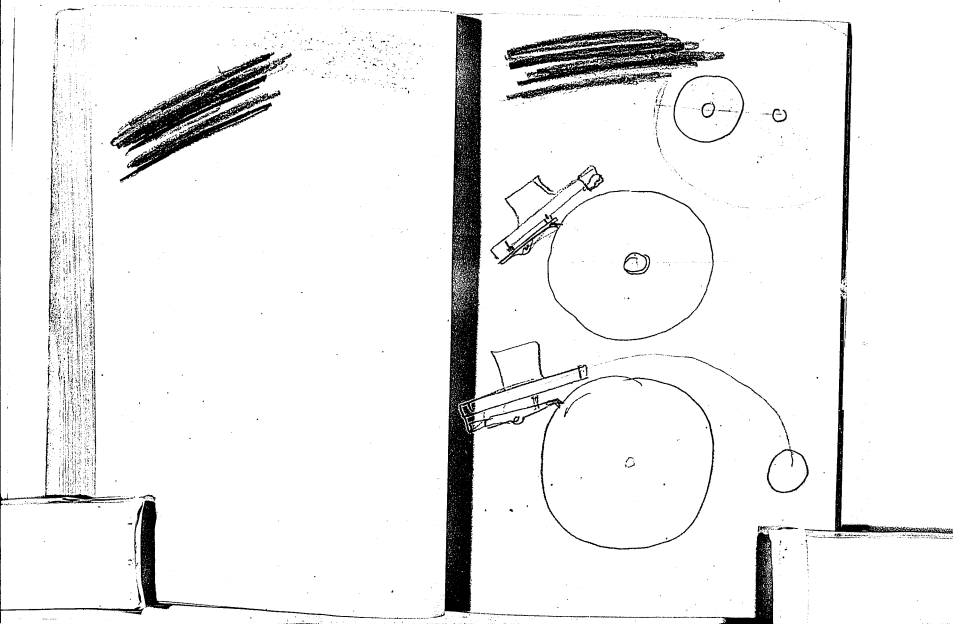
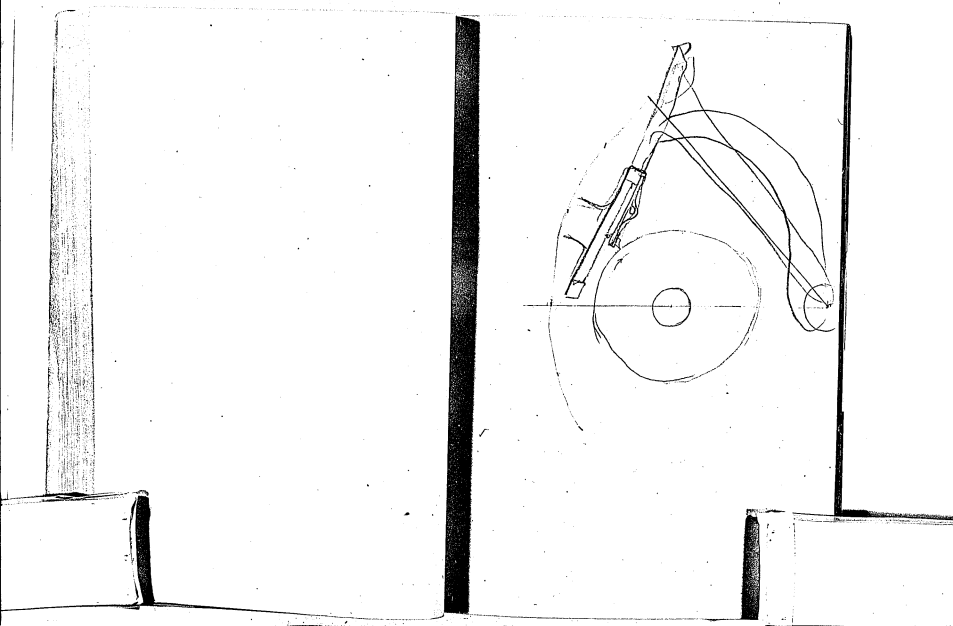
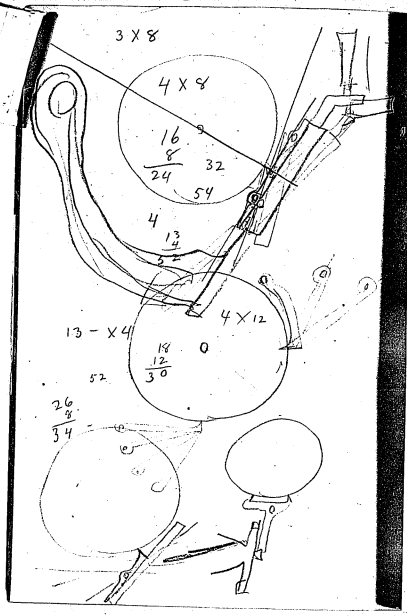
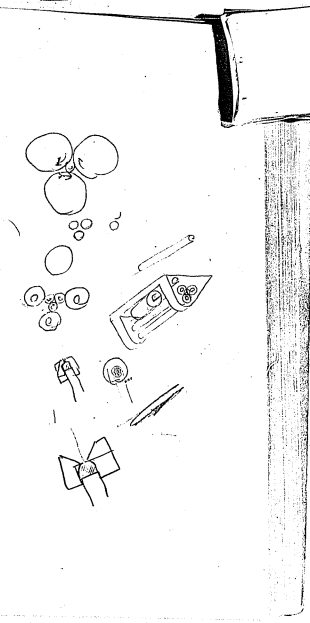
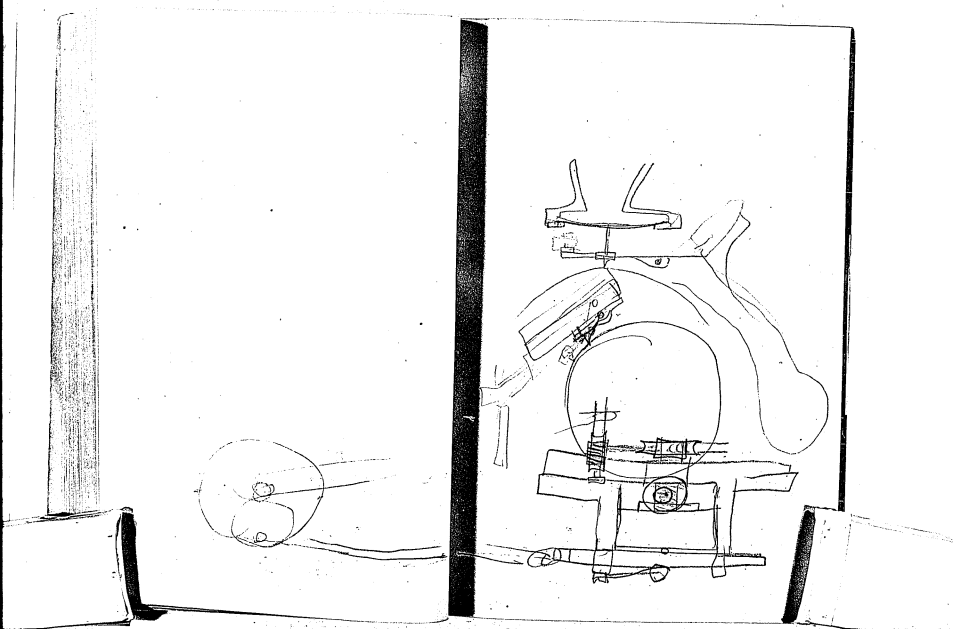
S
Sol Solicitor
Solicitor
Solicitor
Solicitor
Solicitor
Lorenzo
Lorenzo

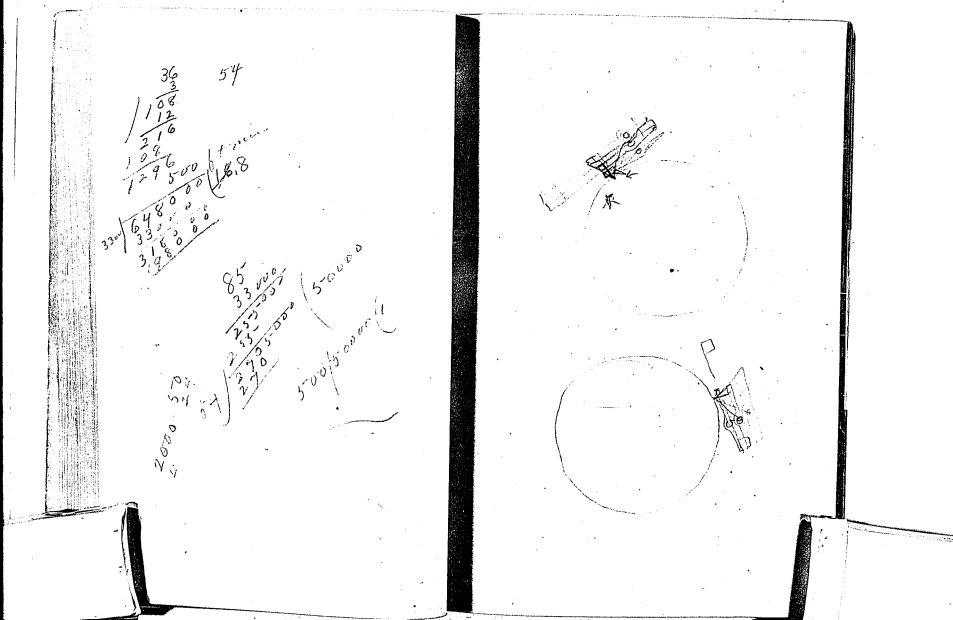


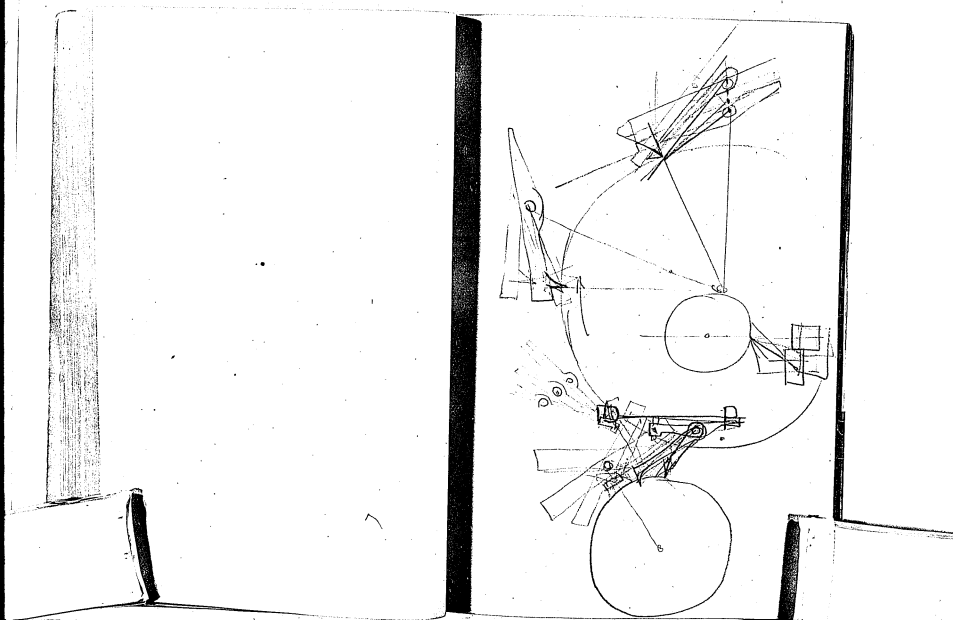



3 X 8
4 X 8
16
8
24
32
54
4
13
4
52
13 - X 4
4 X 12
18
12
30
0
52
26
4
34

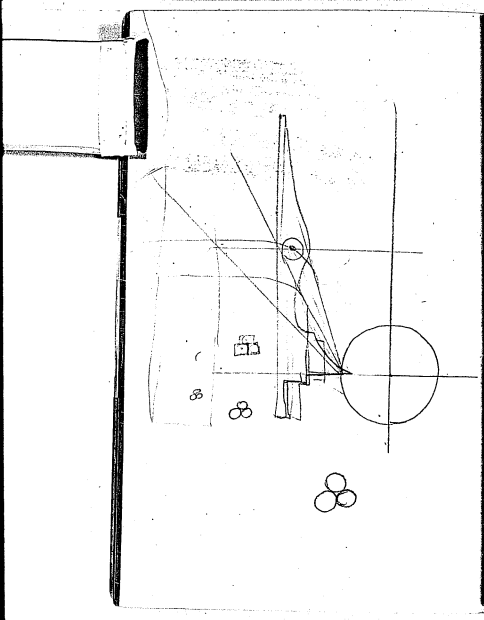


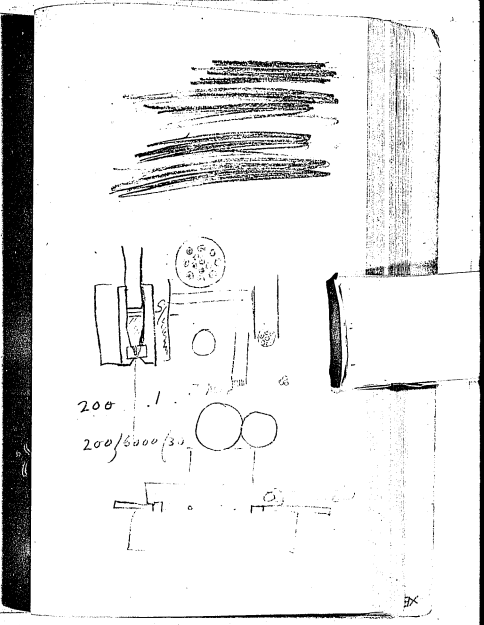






Now is the winter of our discontent made glorious summer by this sun of York
Thou like unto thy glorious heavens beauteous glorious summer by this sun of York

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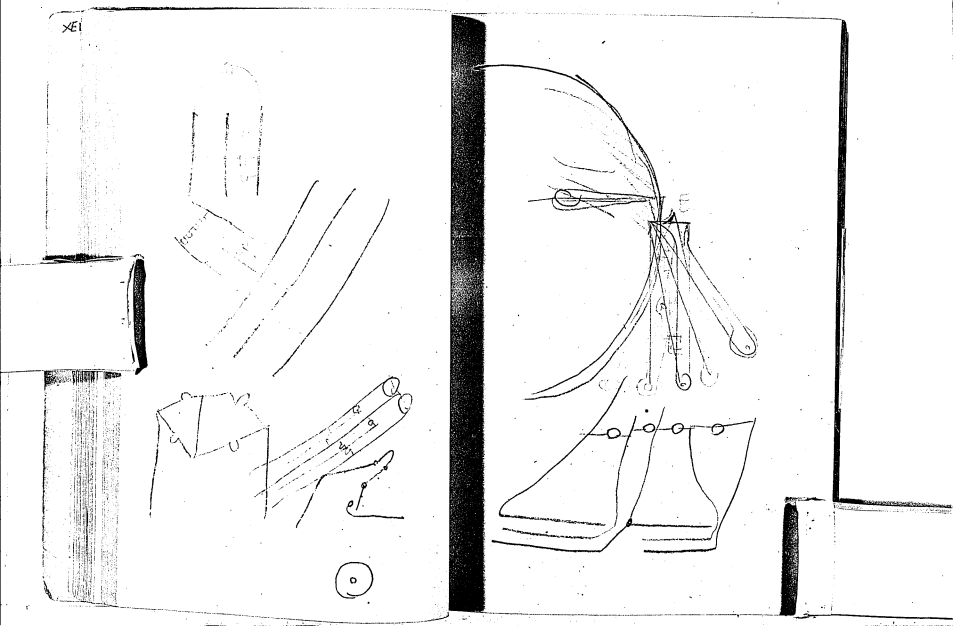

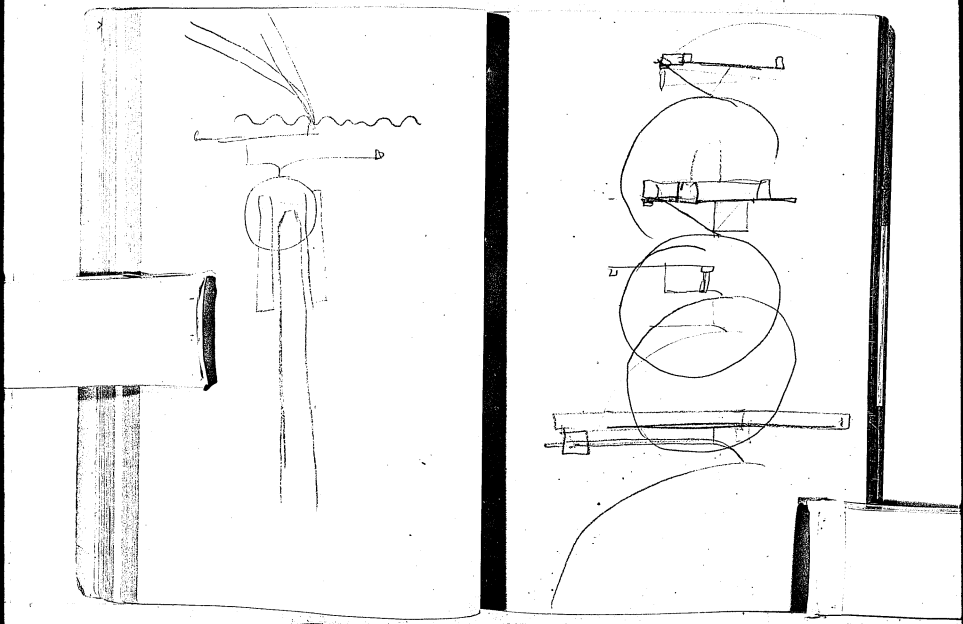

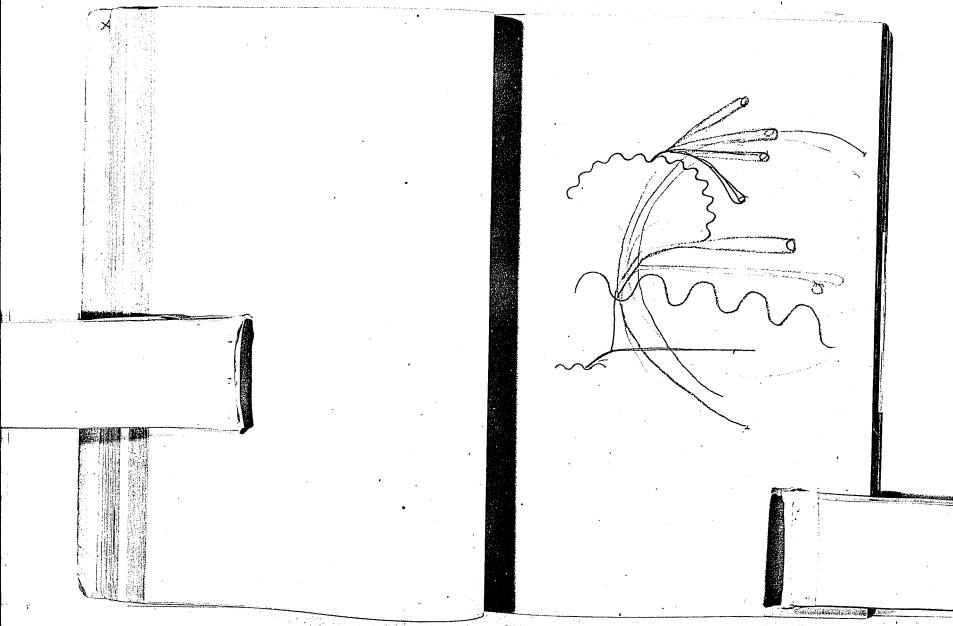

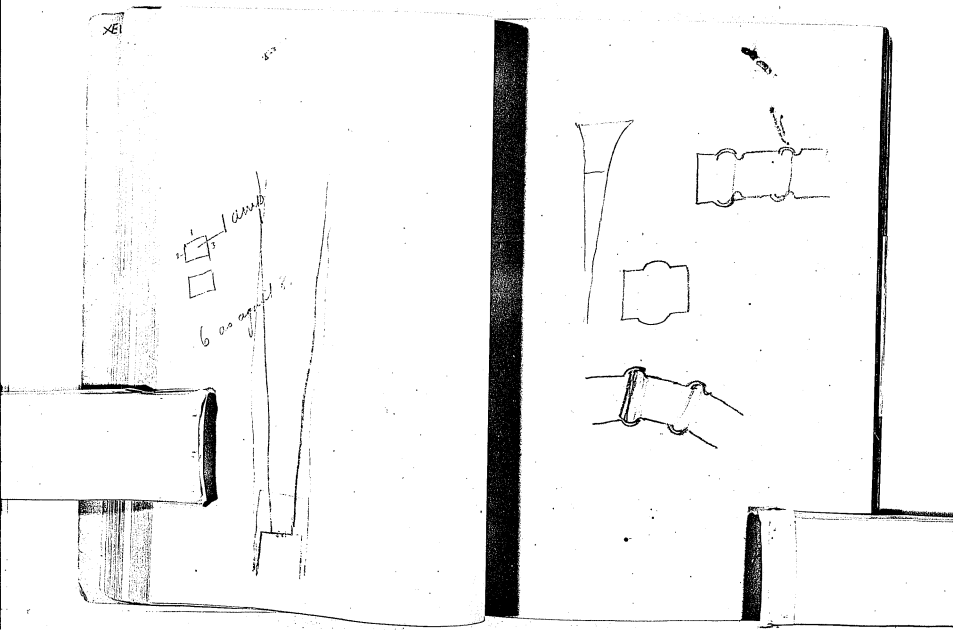

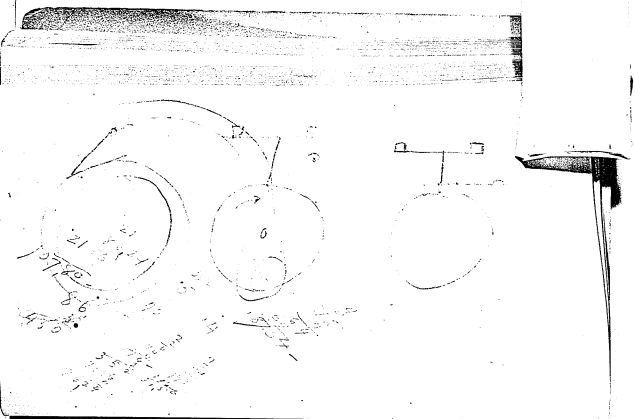

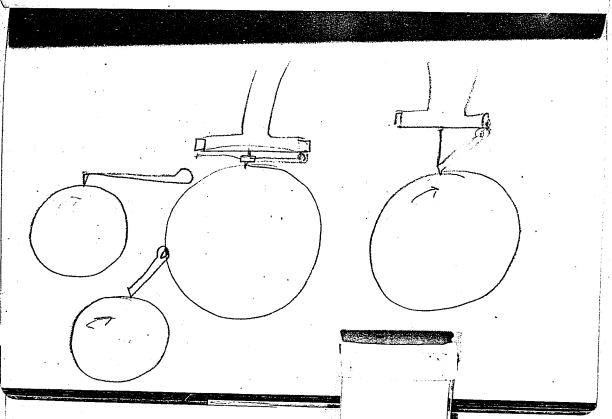

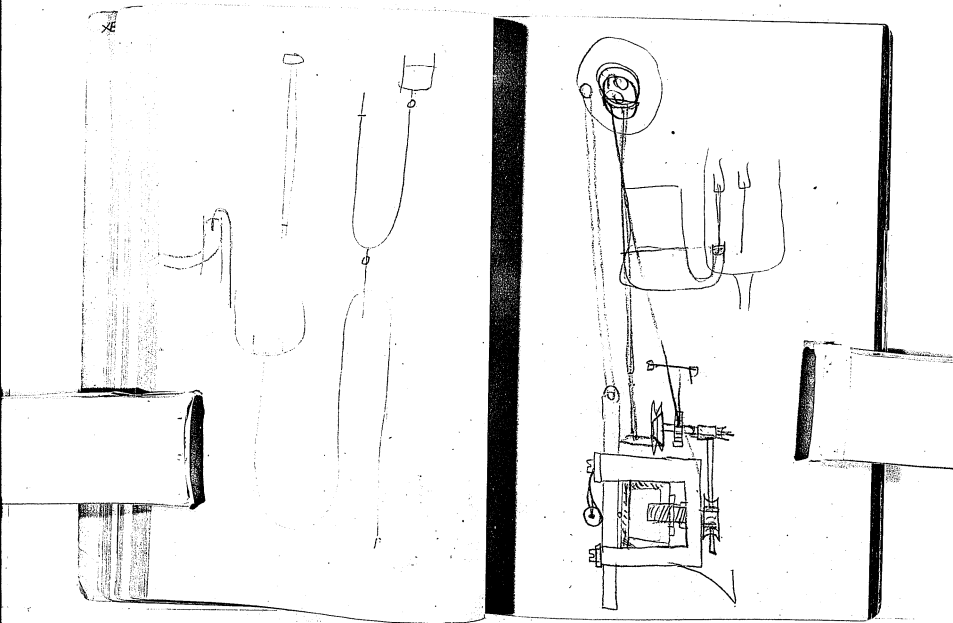

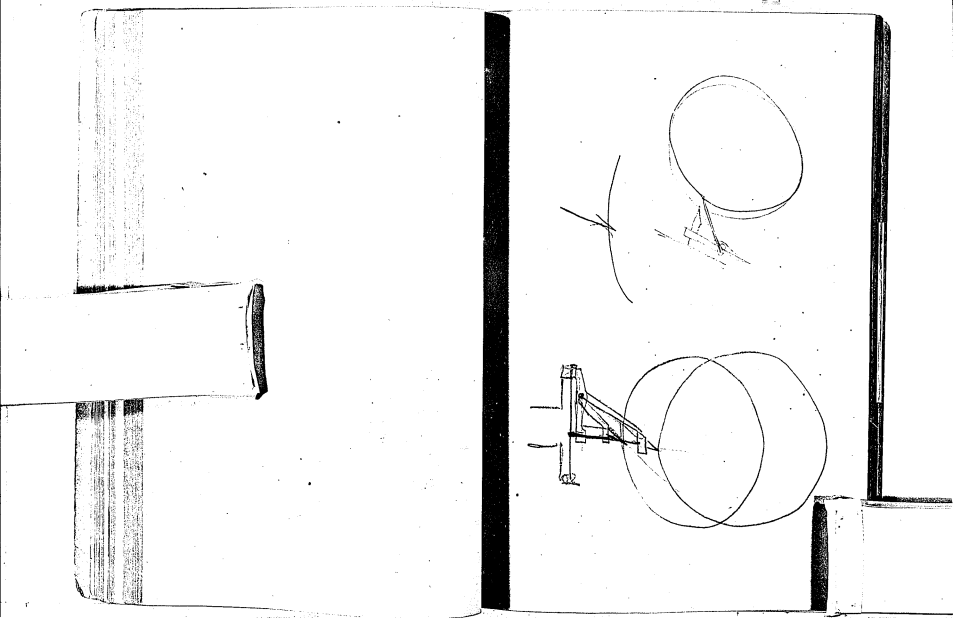

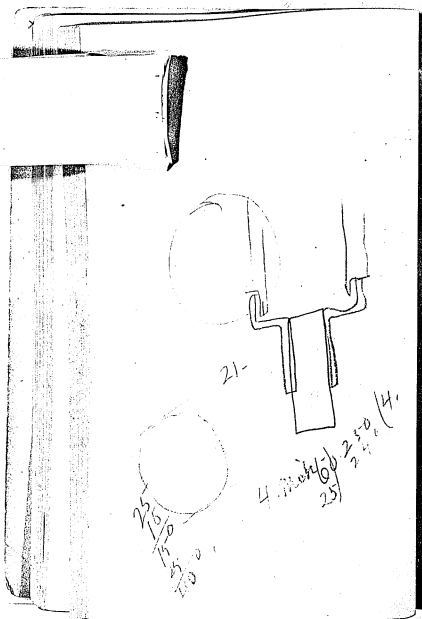
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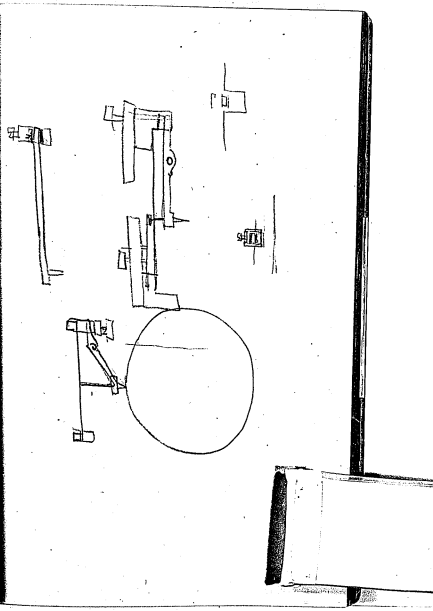

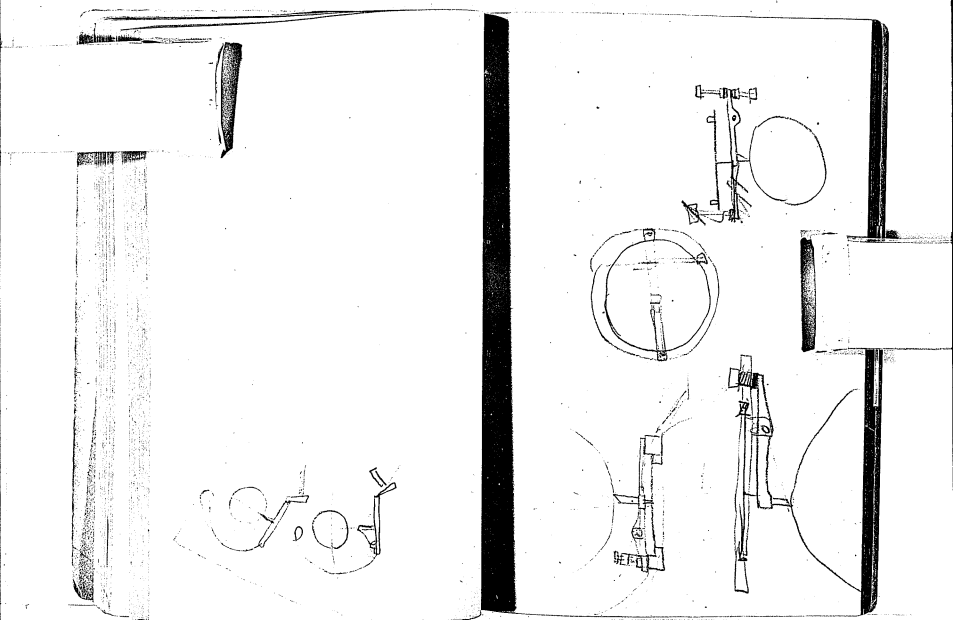

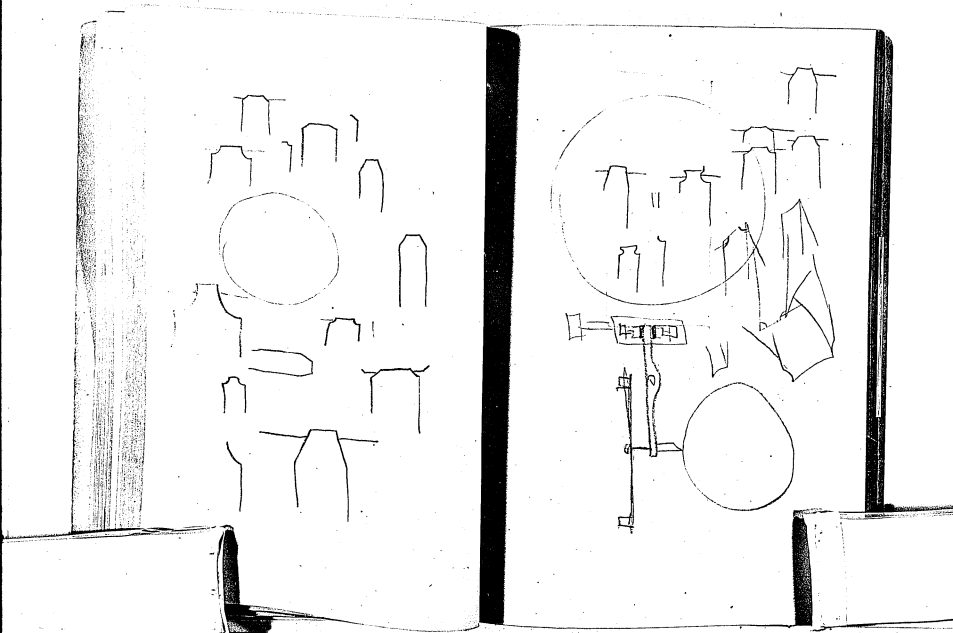

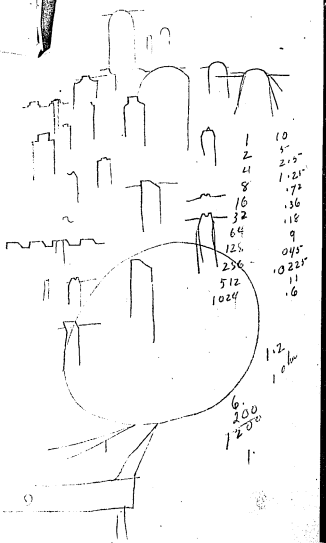


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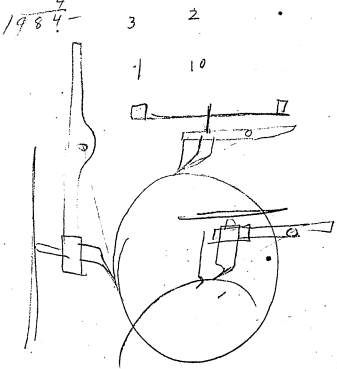

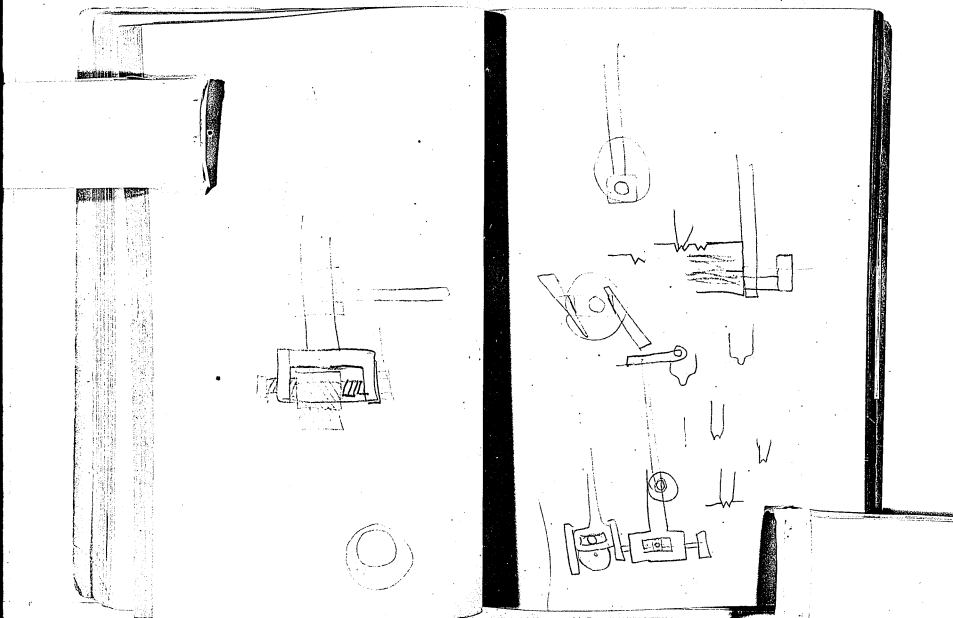

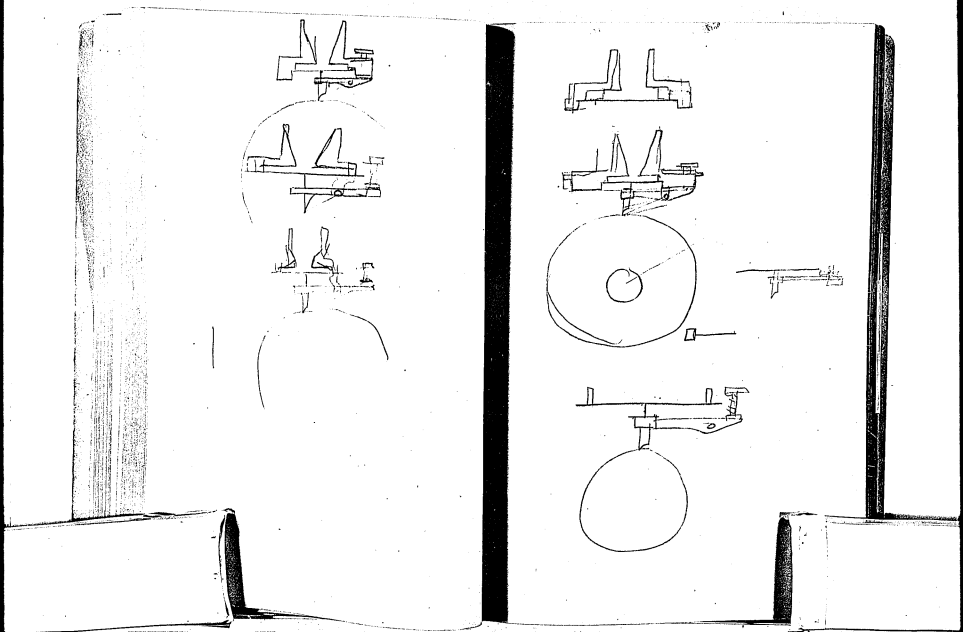

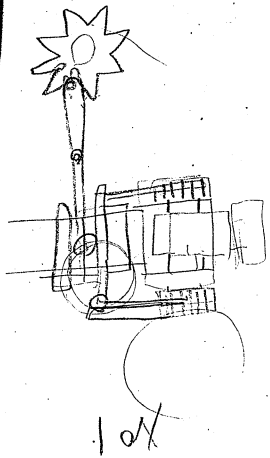

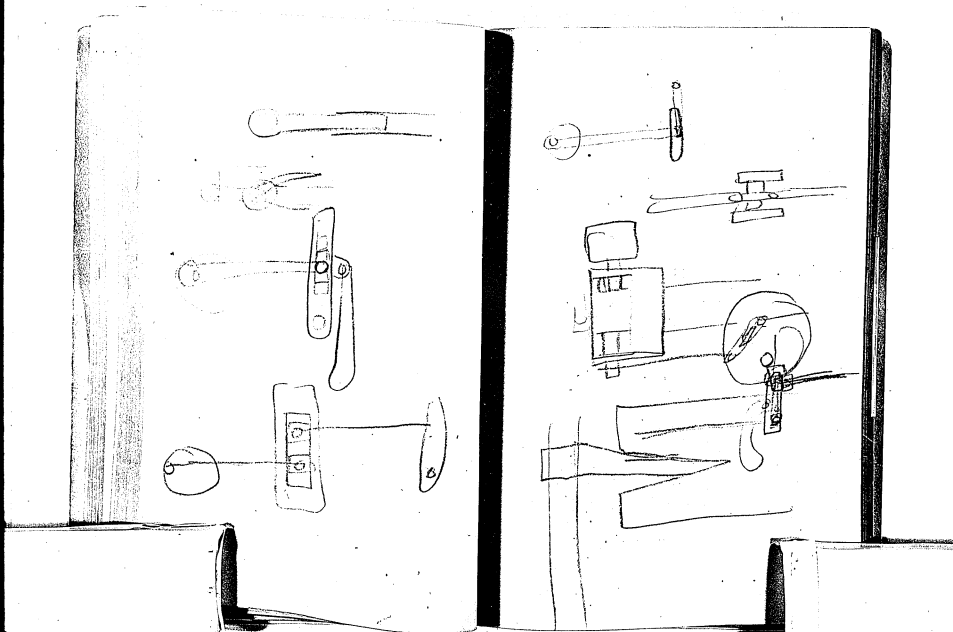

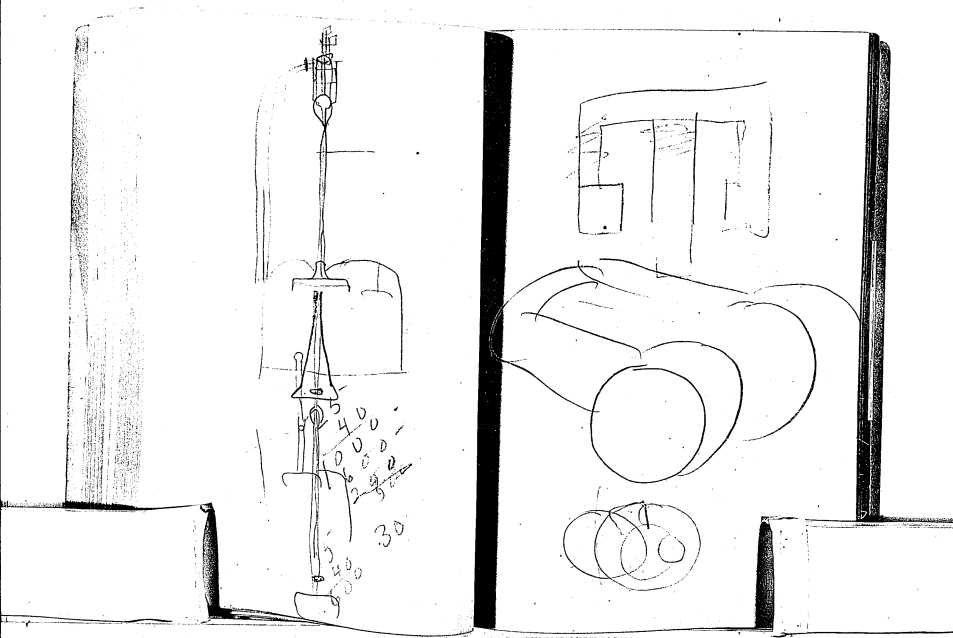

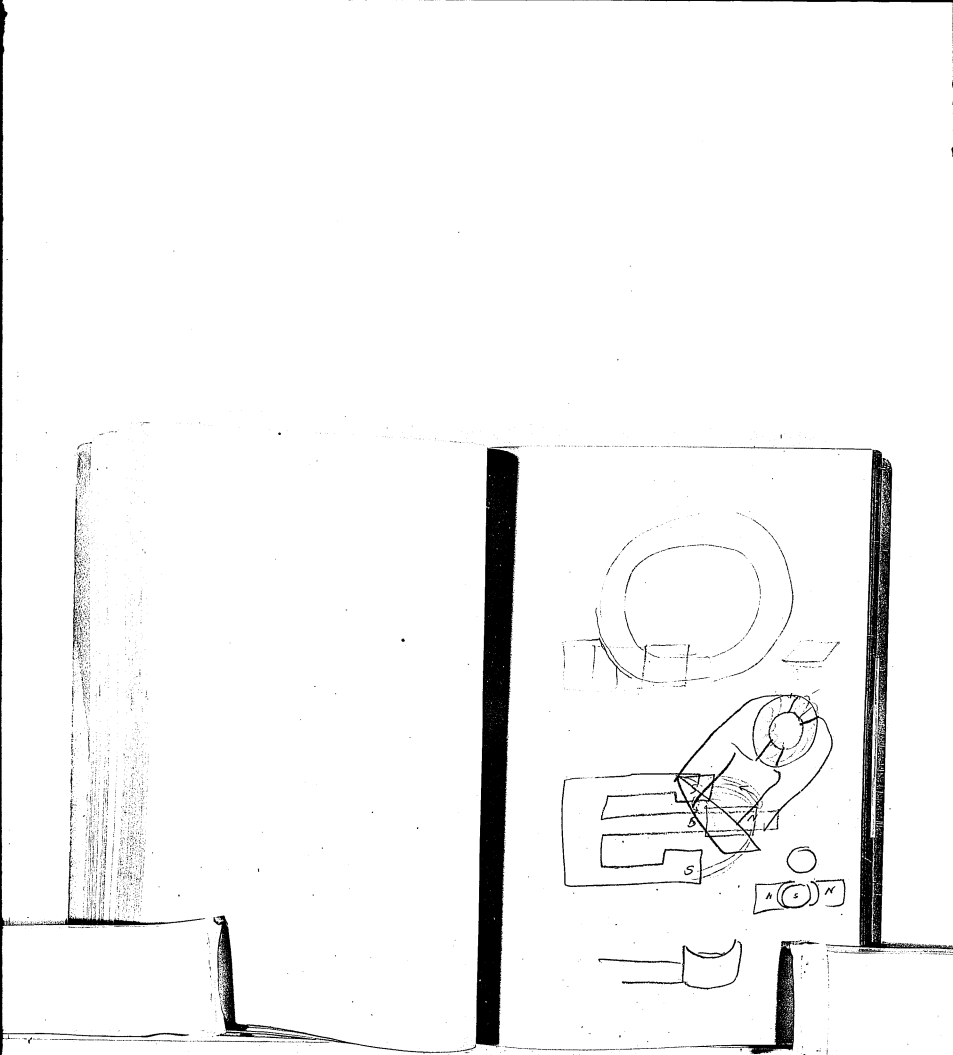
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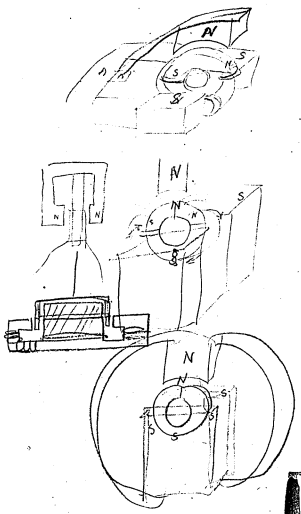
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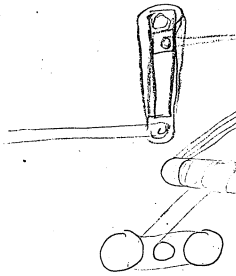

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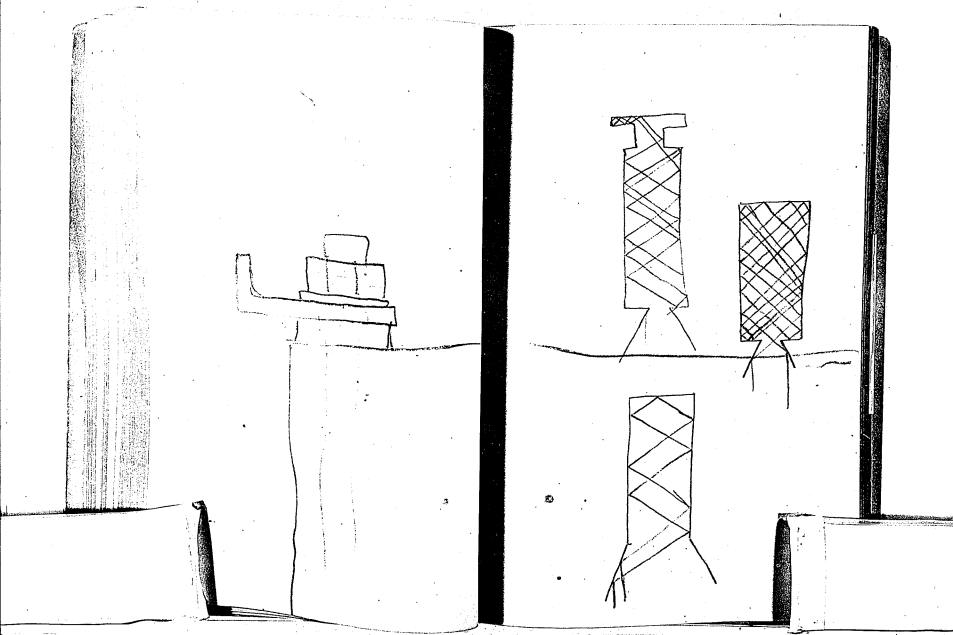

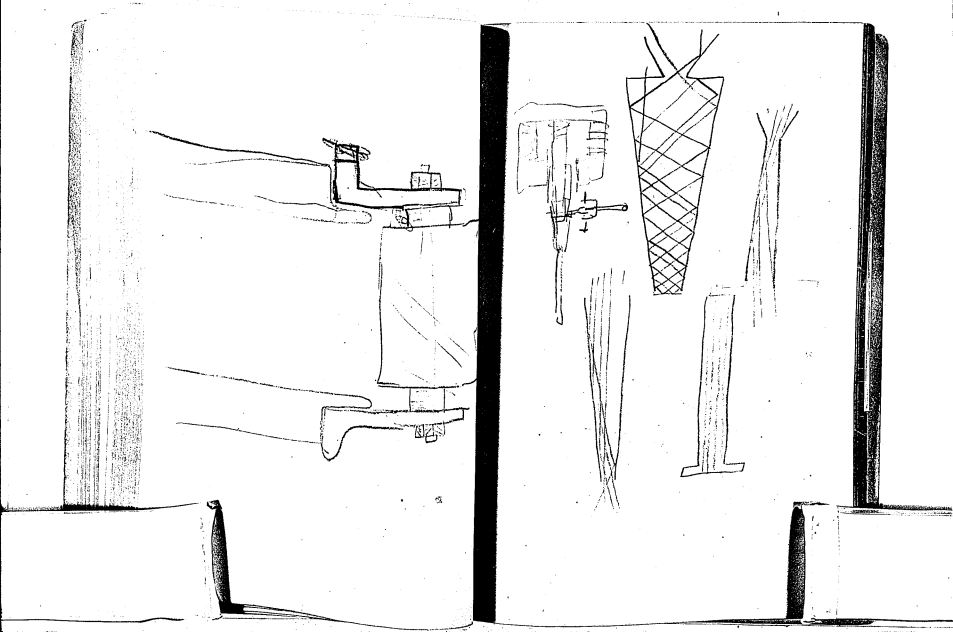

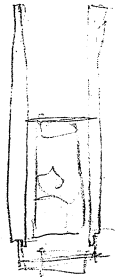

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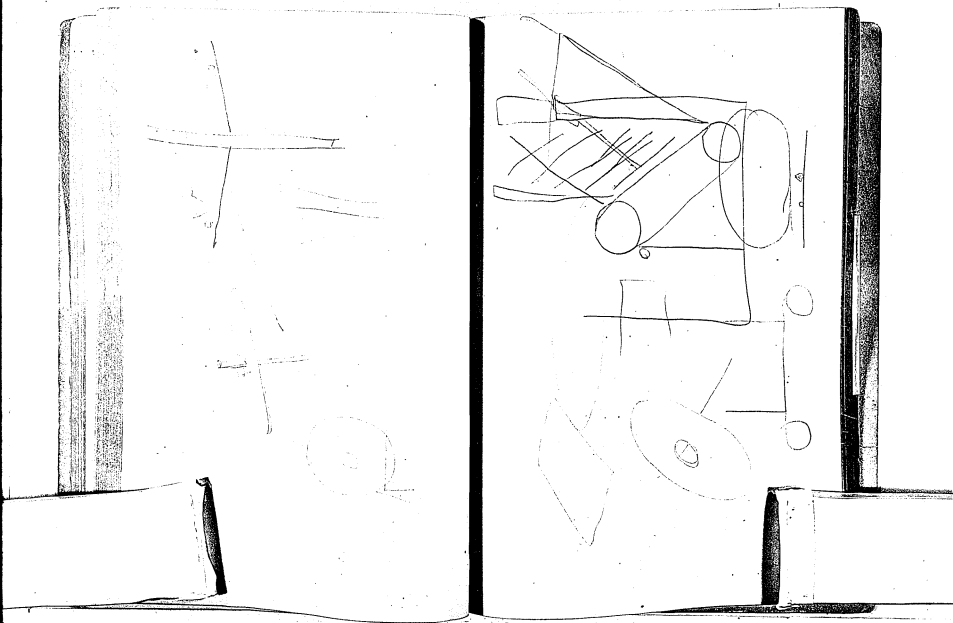
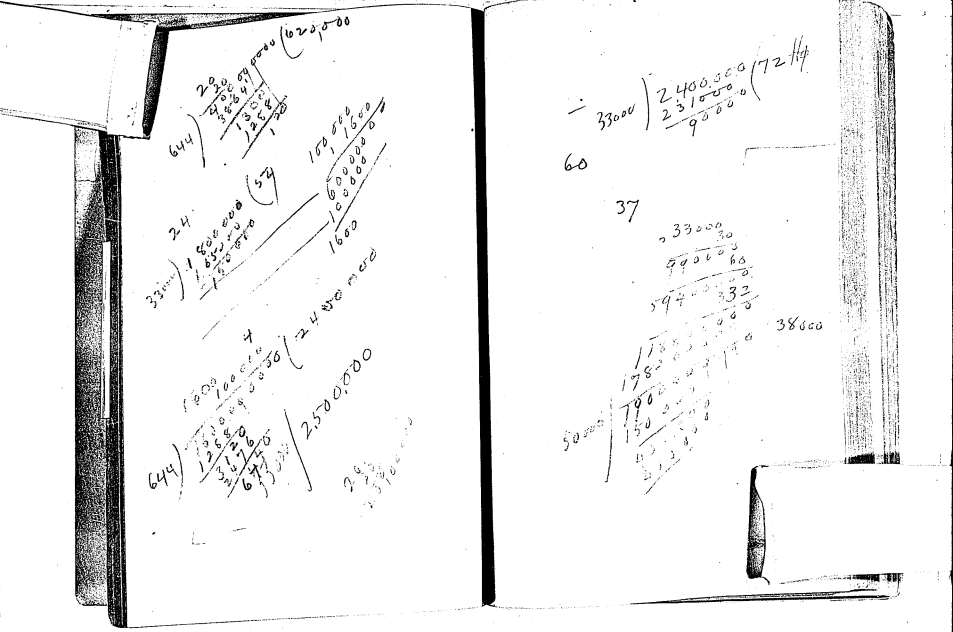
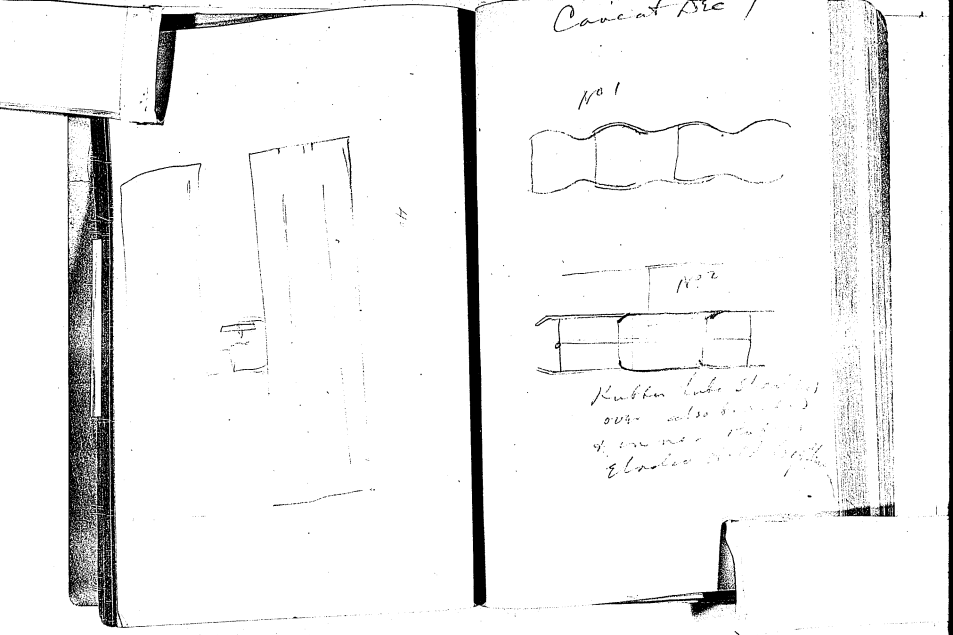
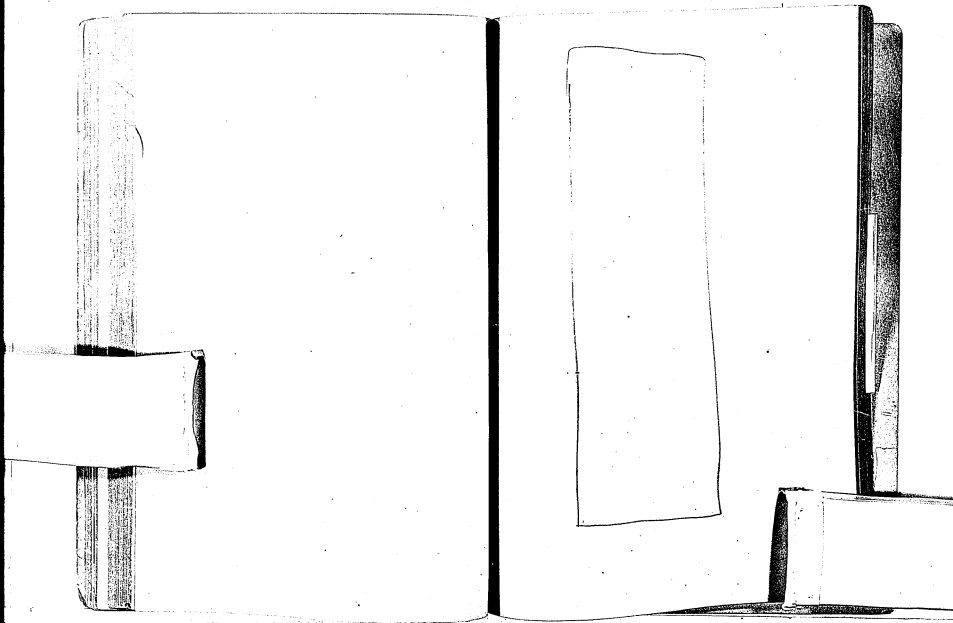
Mary had a little lamb its fleece was as white as snow and everywhere that Mary went the lamb was sure to go

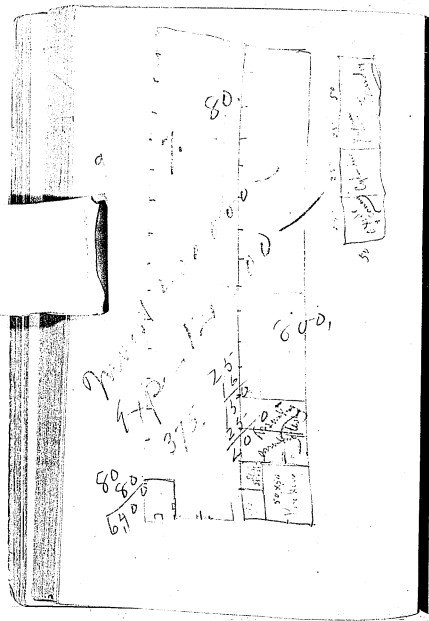
MARY HAD A LITTLE LAMB ITS FLEECE WAS AS WHITE AS SNOW AND EVERYWHERE THAT MARY WENT THE LAMB WAS SURE TO GO






Caveat Sheet 1
No 1
No 2






Detach.

59 New 36 000

~~70~~ Pow 60 000

9 000 36

15 000 2100

5 000 500

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10 20

370 60 250

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120 500 10 000

60 000 25 120

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25 000

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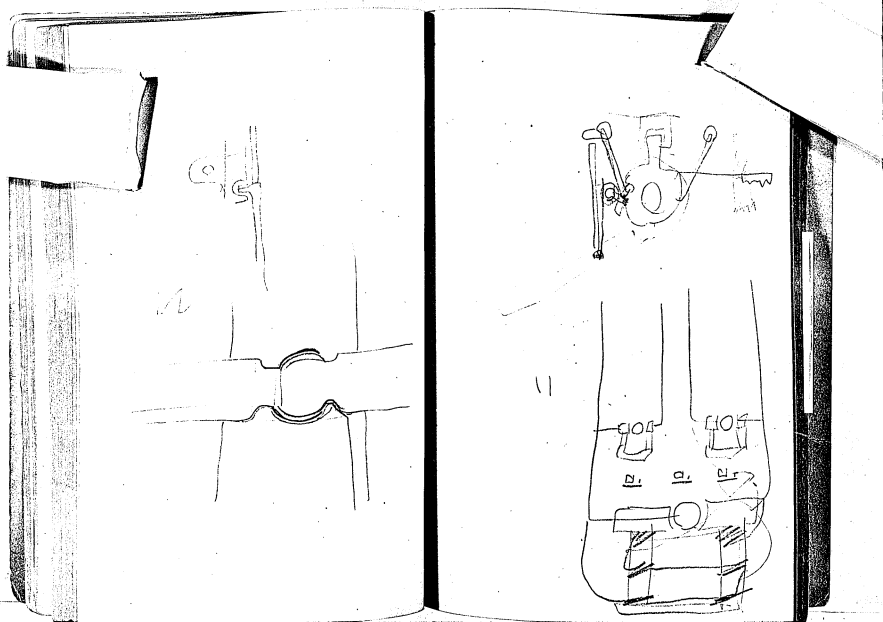
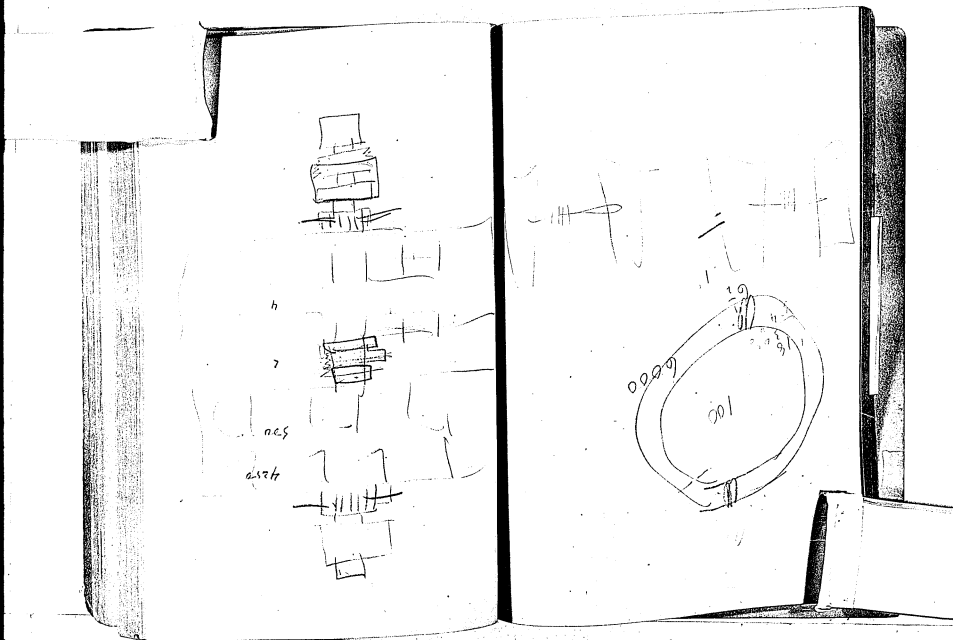
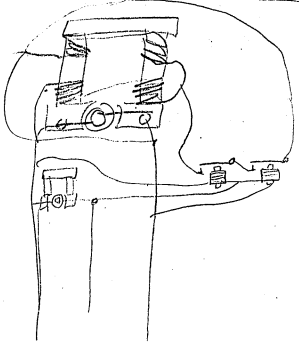
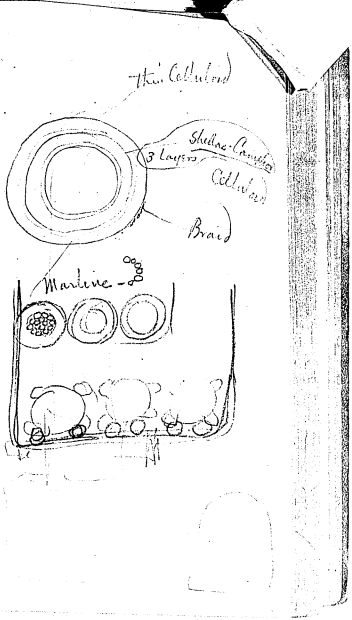







Thin Cellulose
Shielding Conductor
3 Layers
Cellulose
Braid
Marine

Memo—

Silicate Soda + Stearatic acid
in excess so not to make free
Oleyca + Stearate soda +
perhaps free Stearic acid

pp- Silicate Soda by acid on
Hart & Davis - also by Sugar lime
see of Gorham 7 pp 249 Silica in
[illegible] also [illegible]

also matter Silicate Soda
Ligne —
Dry Process of Manufacture

My Coal tar pitch record
Cobra heated by Gulf
reproduction —

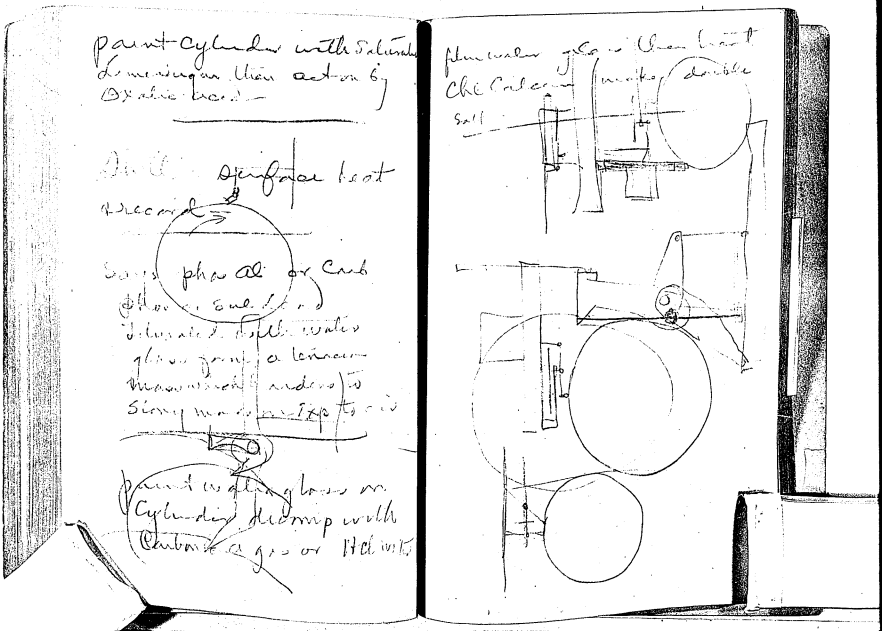
pp. Silicate Soda by Carbonic

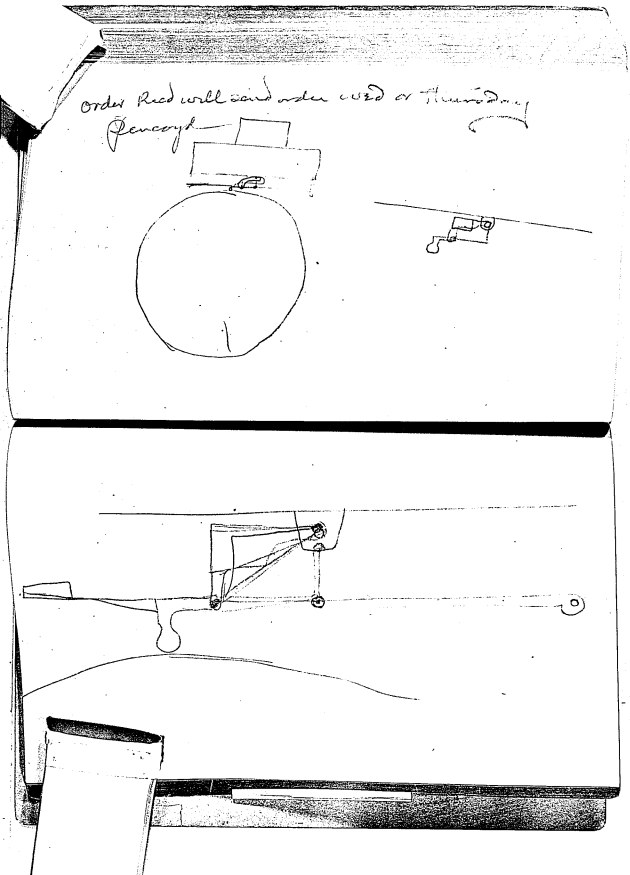
Wanted some process of making
than heat it with Oxalate
of Soda in [illegible] Oxalate
Has changed from Carbolic
to resorcin[illegible]

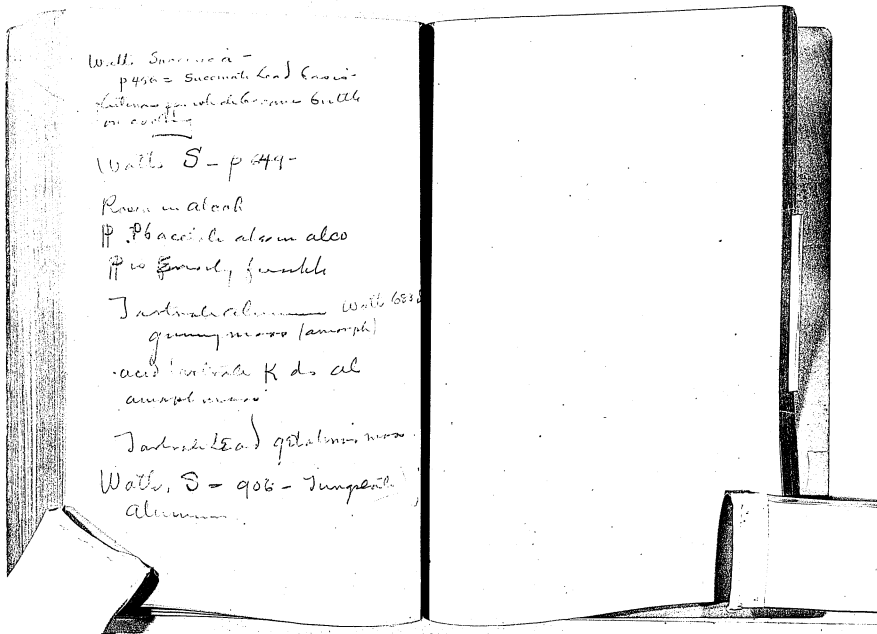
also Treat with Boron
Chloride forming anhydrous Sulphuric
[illegible]
+ Vanadic [illegible]

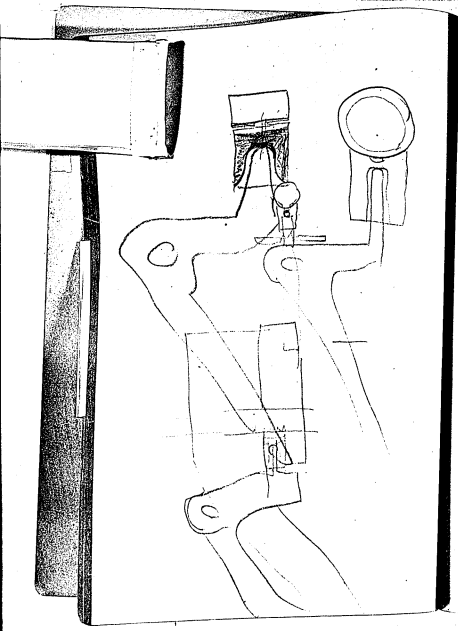
Fuse Chloride Calcium
in Cyclone then [illegible]
with Oxalic [illegible]
Oxalate Soda or perhaps

Fuse Sulphate [illegible]
action on with Chl Boron
See Silicates [illegible] with Rey
See p 249- 0081




Order Rod will and under used or Thursday
pencil





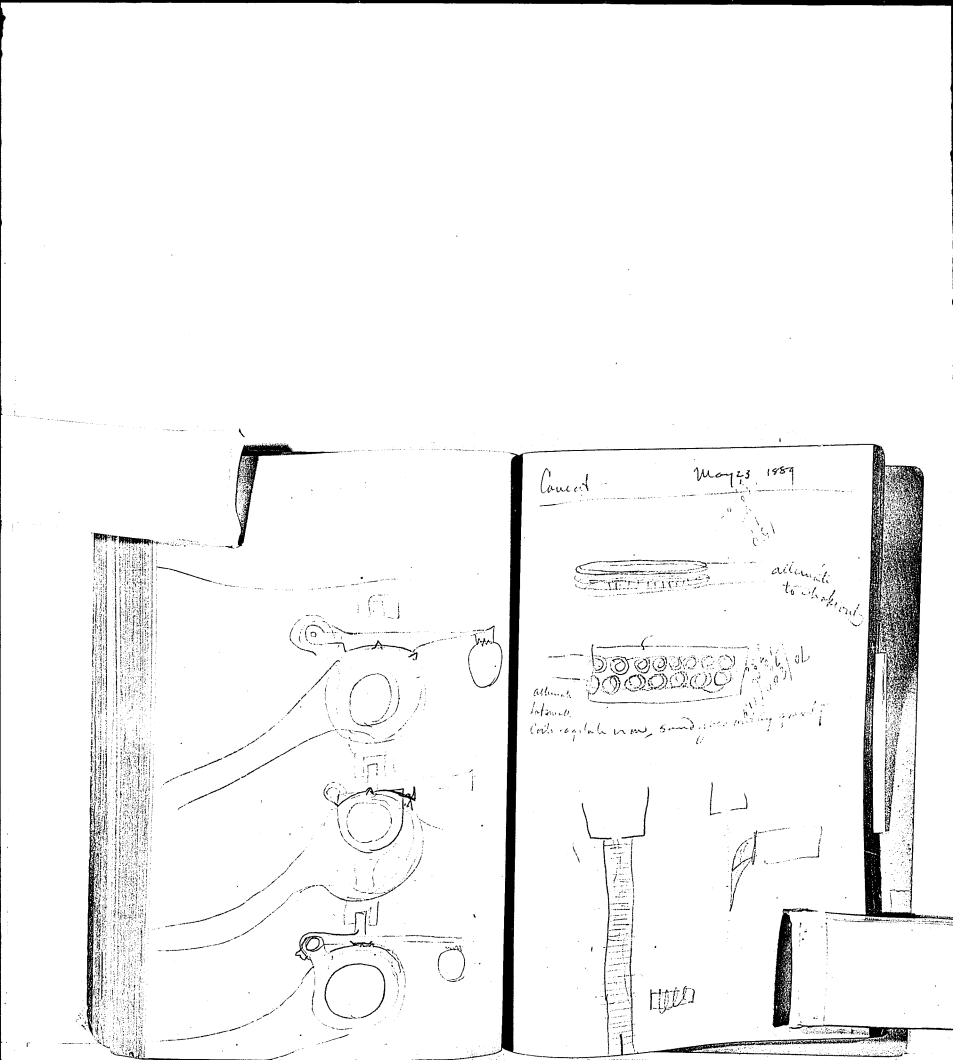
Dia Conf 15"
Rev 15"
30"
15"
225" f/ area

15"
20 plows 15 15"
300 f/ passage

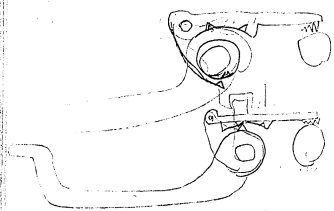
Say 500 lbs Coeff 1.5
250 lbs normal

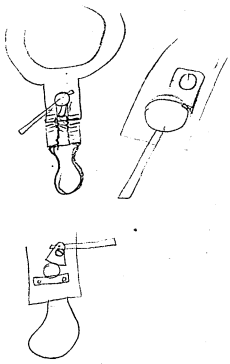
7.25"
-2.00
1125"
-75-0
-5-01

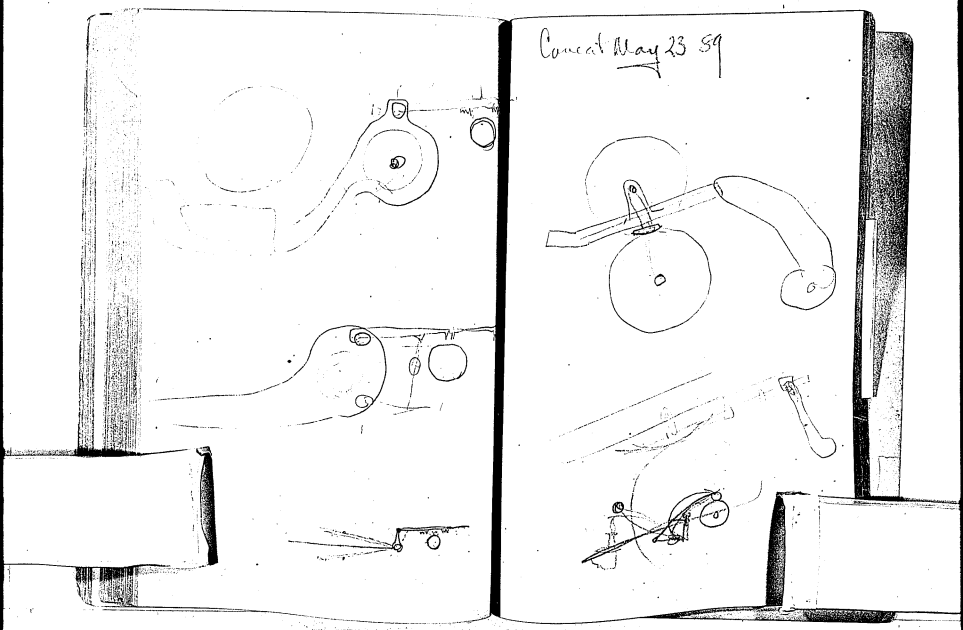
Concert phono Dr. Melgiste May 23 1889


Concept
May 23 1889
adjustable to shakeout
adjustable
horizontal
Cords regulate screw, sound gives setting

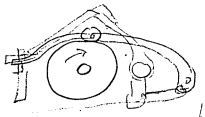
Caveat May 23 / 89






Comcat May 23 59

Caveat May 23 89 —

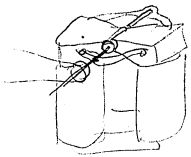


Screw back on clamp


Patent on Hypophosphorous Acid
Electrolytic smaller Cu O
one pole Cu 2 H 2 other

X may be Arsenic
and

Concert May 23 89



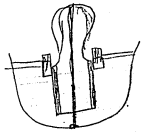
shaft of ebony
v. hollow Alexander of fiberglass
Crucible - Metal Matrix 6-
rotating permanent magnetic
field

Commenced Monday 23 2559

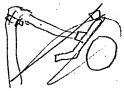
Tape weeds - Chlorinated Bulabór Reserve.

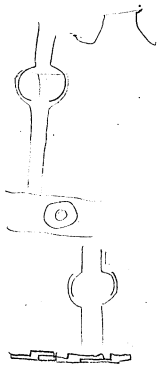
follow with $H_2O$ if necessary

Cold hot/cold or rotate. whole minimum.

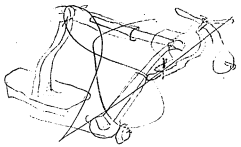


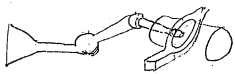
dip to wipe.



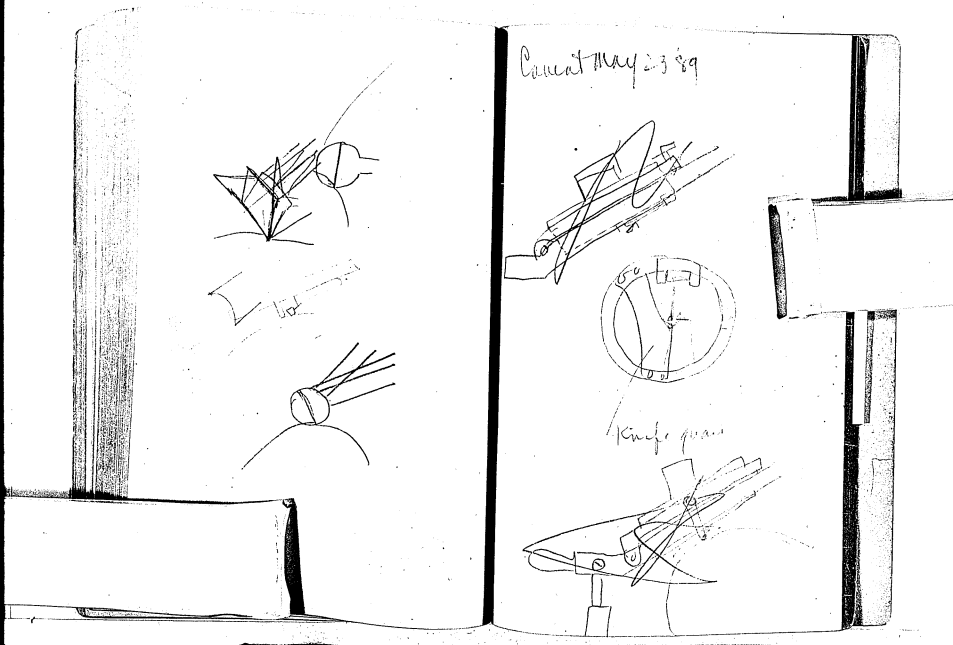


Came at May 23 81

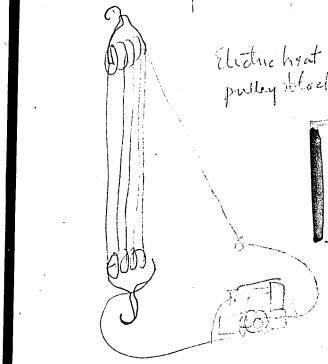


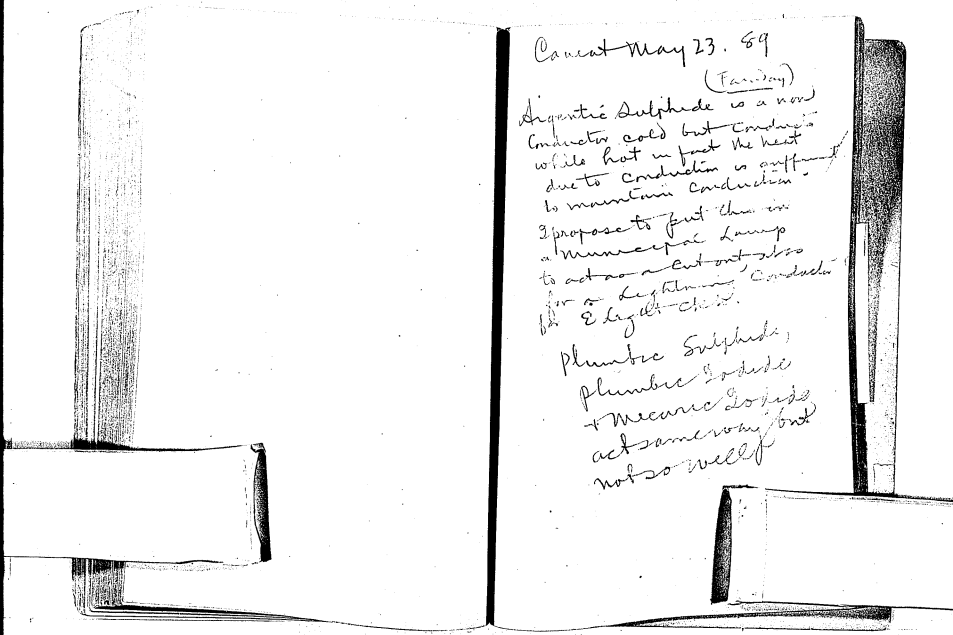


glass ballpoint or metal


Concert May 2-3 89
Knife gears

Concept May 23 1884





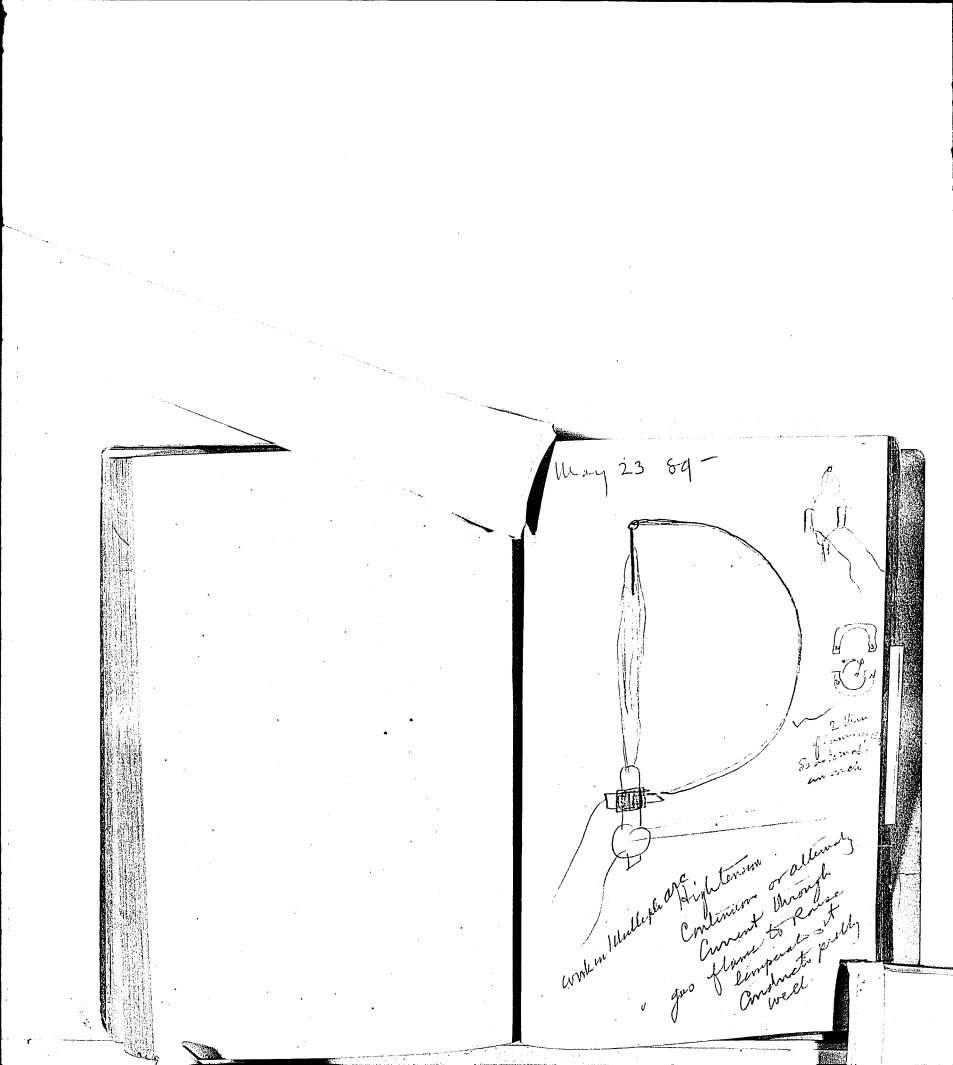
Caveat May 23. 69

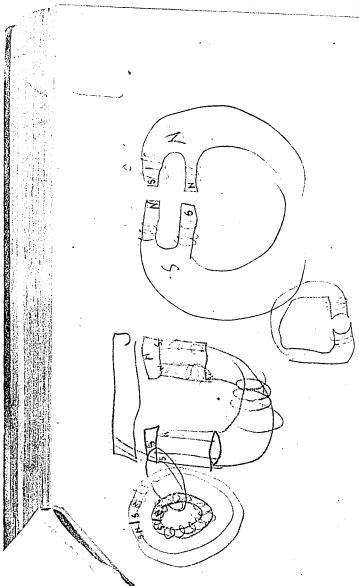
(Faraday)

Argentic Sulphide is a novel Conductor cold but Conducts while hot in part the heat due to Conduction is sufficient to maintain Conduction.

I propose to put them in a municipal Lamp to act as a Cut-out also for a Lightning Conductor for an Electric Light.

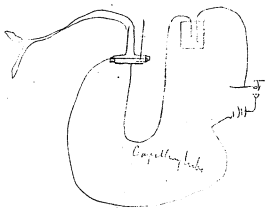
plumbic Sulphide
plumbic Iodide
+ Mercuric Iodide
act somewhat but not so well


May 23 84 –
Tightening
Continuity or allowing
Current through
gas flame to Reduce
temperature at
Contacts partly
weld




Came at May 23 89

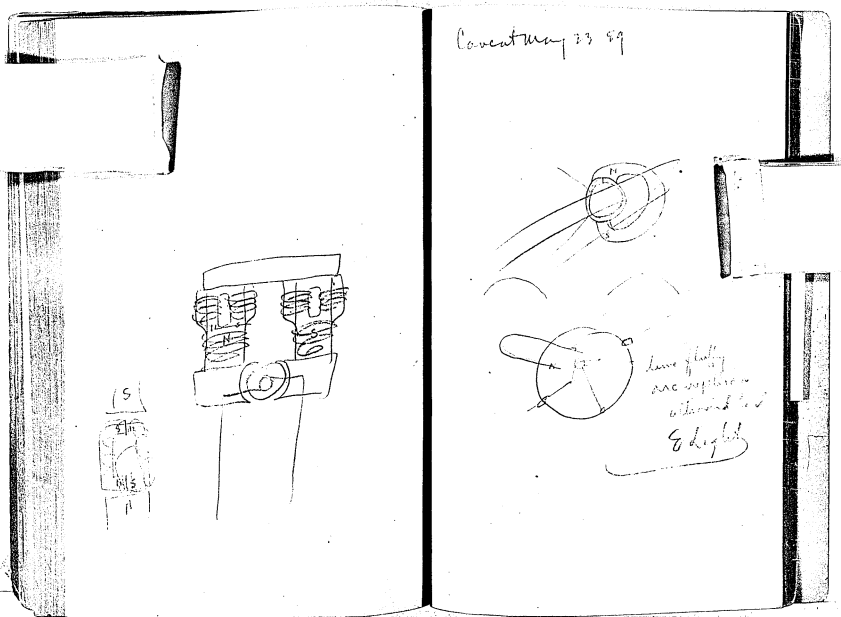
Zinc from Cyclic with High Thermo-electron conductivity which dissolves the ZnO on the positive right —



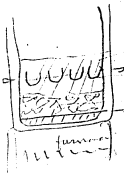

Phase points.
point of view
viewing the shape +
shape plotted with
Circumcenter by
& Cells which surrounded on
chromosome & Chromosome

Delaunay (Sandwave)

See Miller Hyper 592

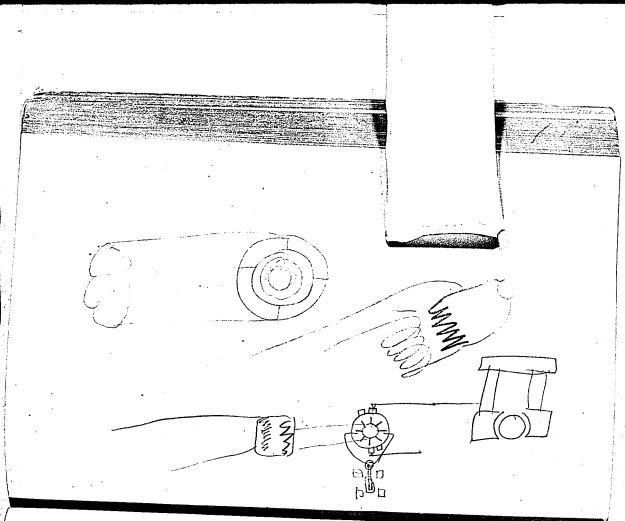


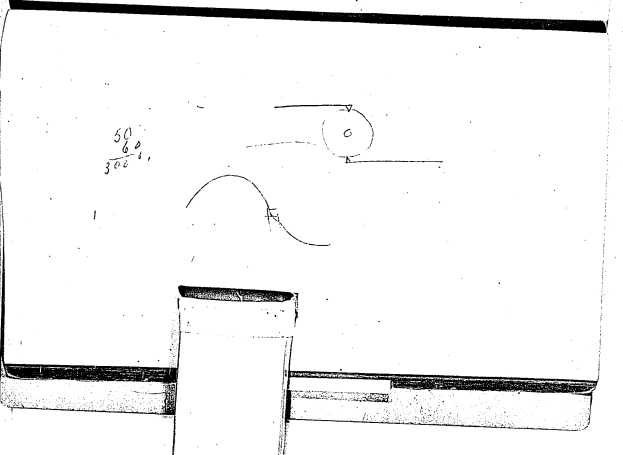
Concat mag 23 89

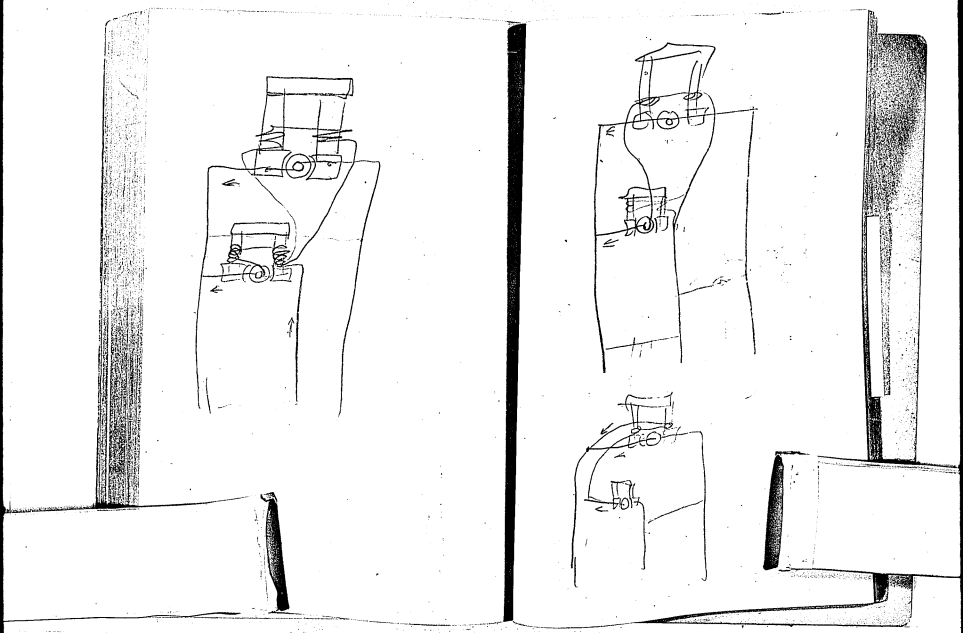


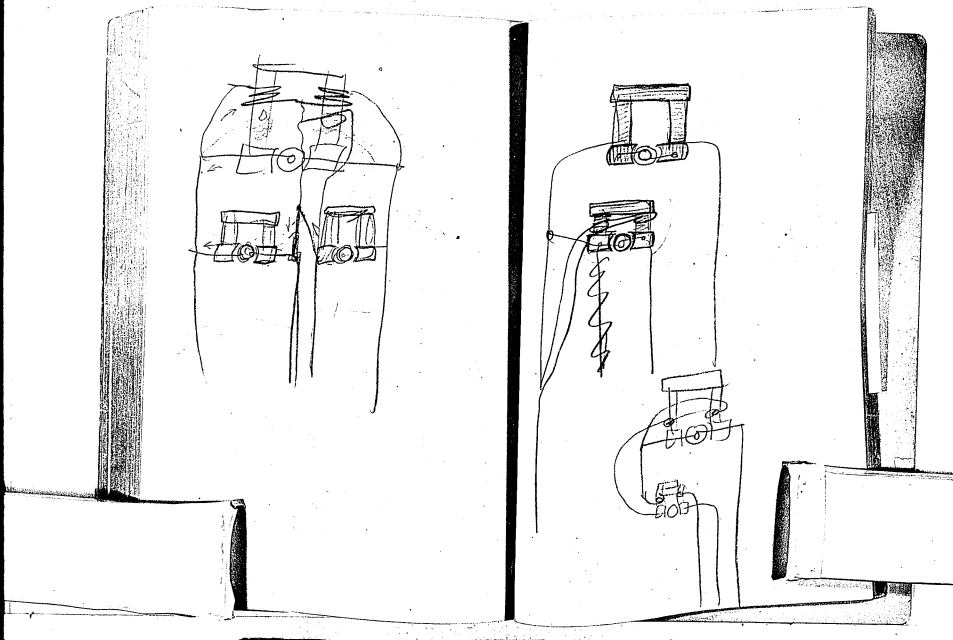
polarized light
CaO in Zn-Si
Bond
- 3 mm borosilicate

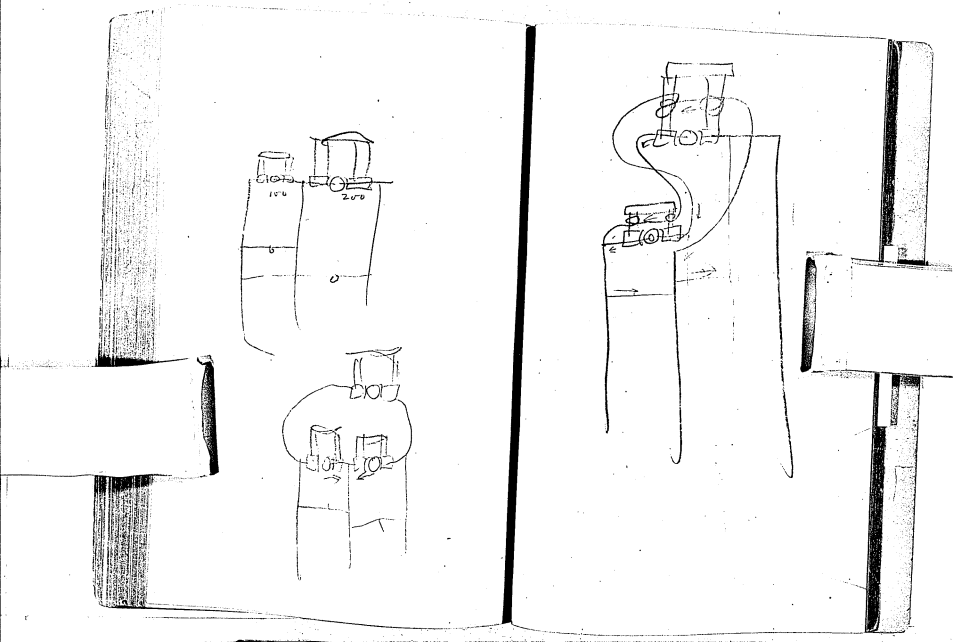
E from Cond

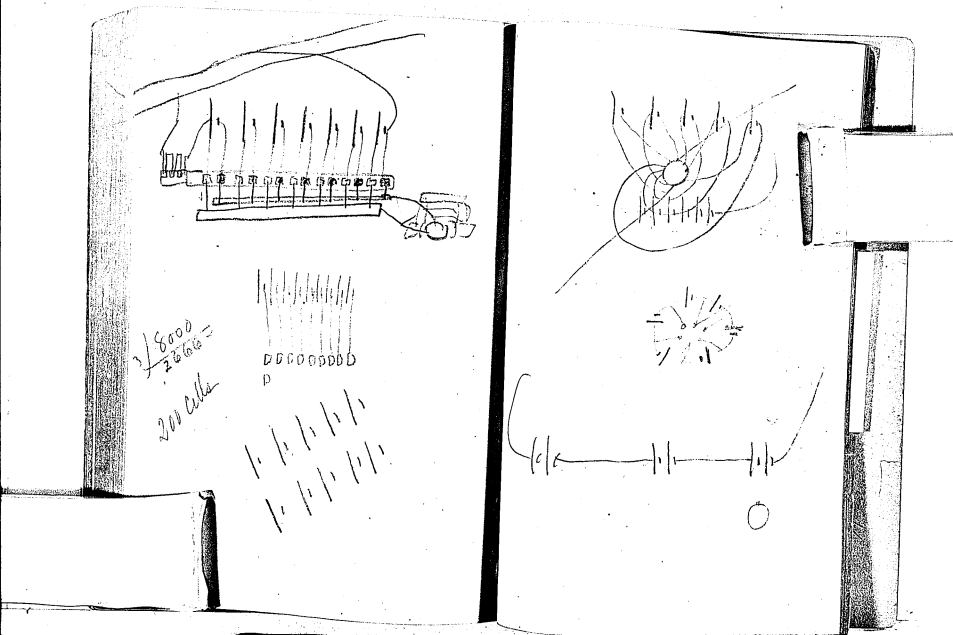


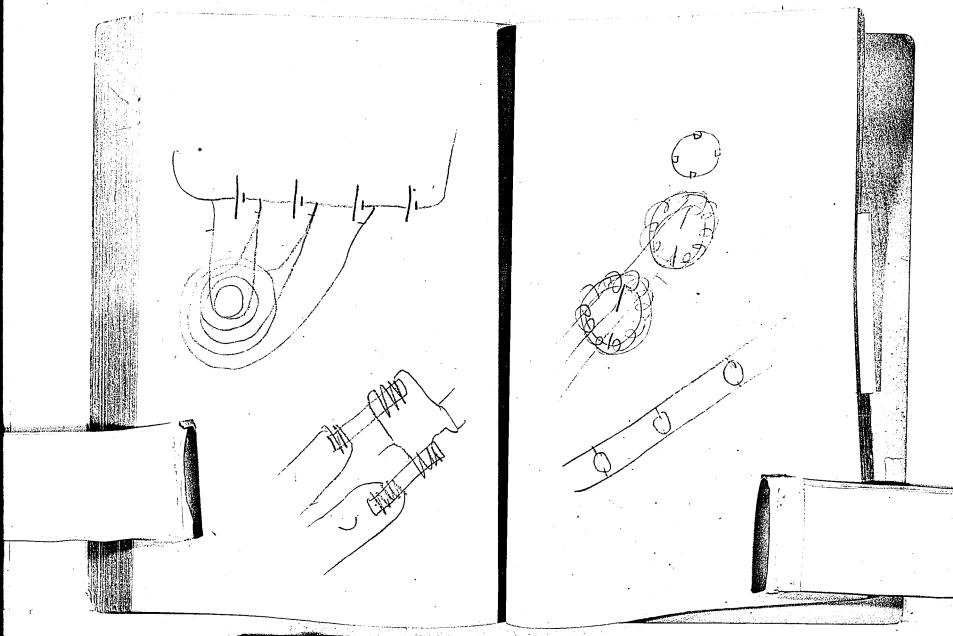


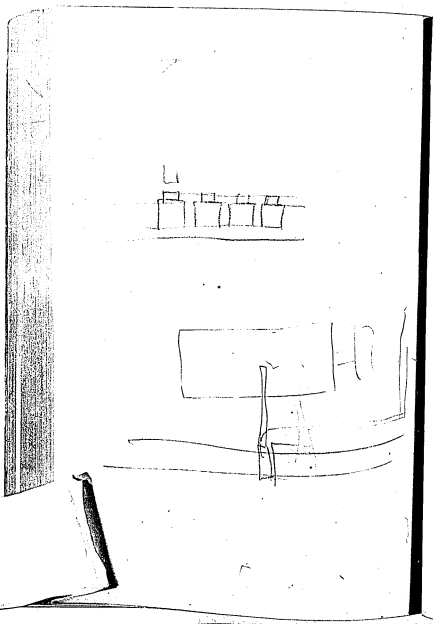








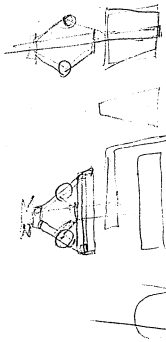


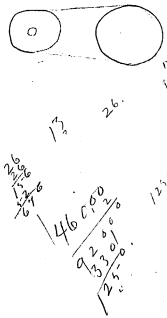


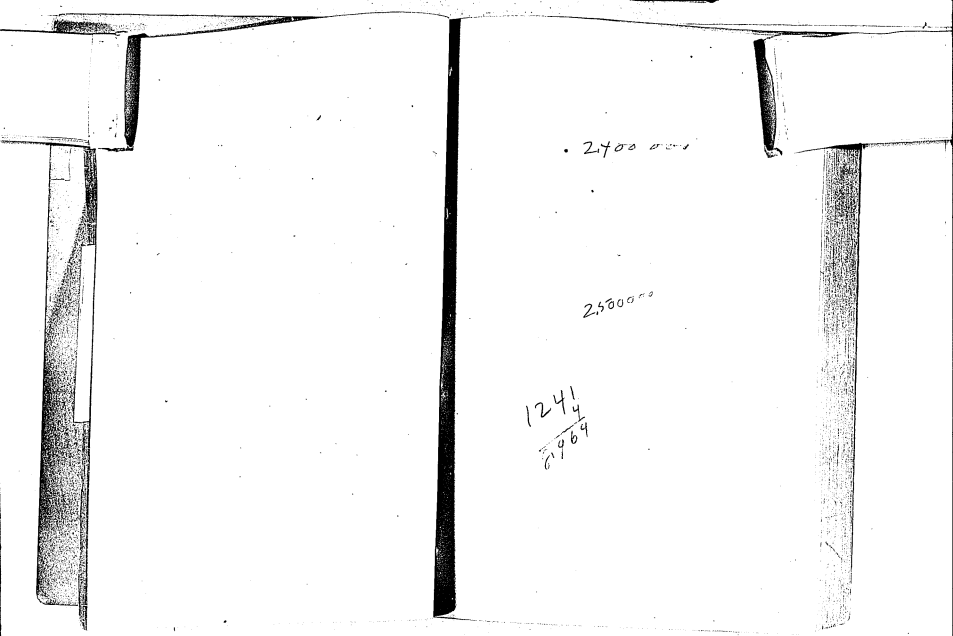
Camshaft
Ratio 1 Rev 3 to 1
1200 Rev 2 Belt pulley turns
1650 Rev 12 inches
belt speed 2400 ft/min

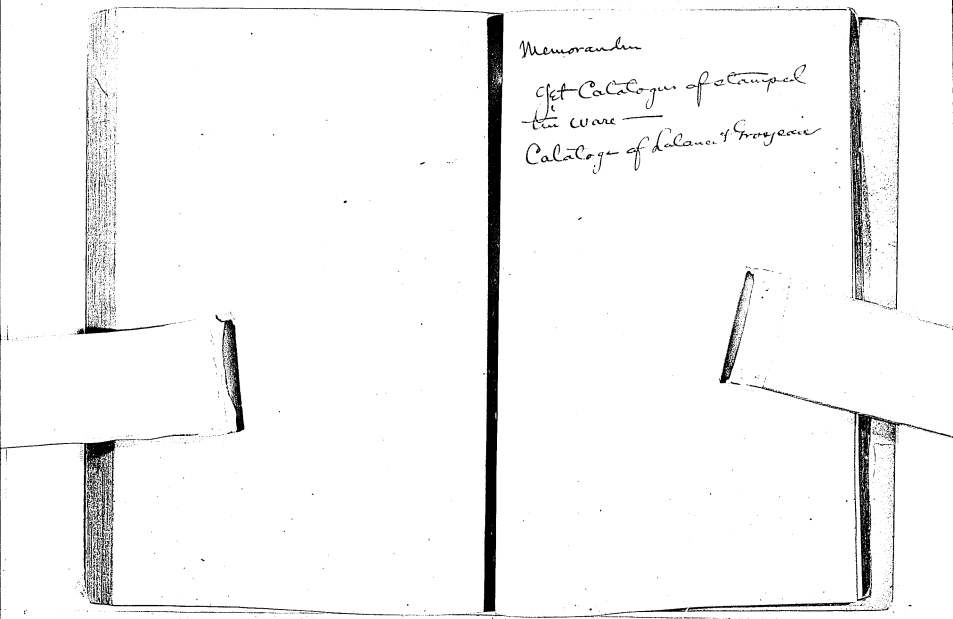
285 / 1200 (4.2
1140
600
570

18 - 7½
18
230
2 Belt
230 in
76.-
36 - 3 ½ inch
Inner
165
400 Rev
100
90. inches
7½ feet.
7.5
36
247
60
5-00
2.85
3.3
44
16



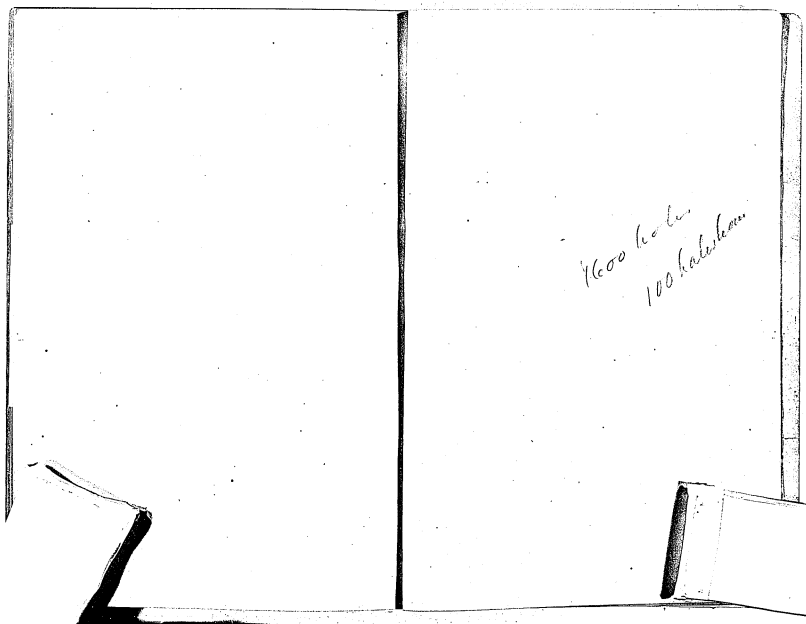


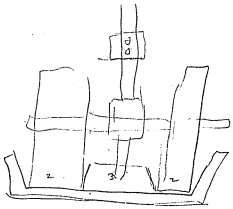

2400
2,500
1241
4
1964


Memorandum

Set Catalogue of stamped tin ware

Catalogue of Balances & Scoops &c


4600 kcal
100 kcal/km

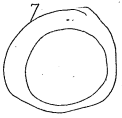


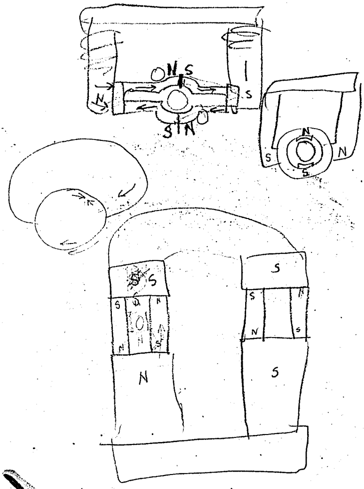
24 24

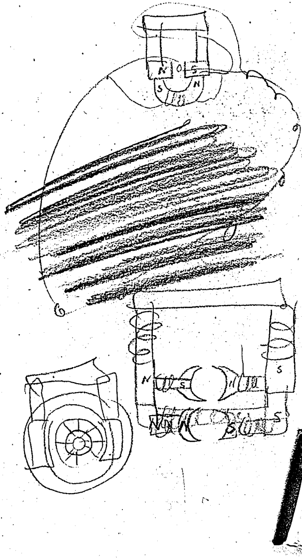
18- 36- 7

18. 36-

5




O N S
S N
N
S
S
N
S
S
S
N
N
S
N
S
N
S
S
N
N
S

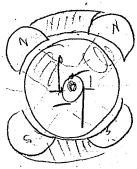

N O S
S N
N
S
S
N
S
N N N
S
S

**Notebook, N-88-06-26**

This notebook was used by Edison in June 1888 for notes, drawings, and calculations regarding a motor for the phonograph. The front cover is labeled "514." The spine is labeled "70." The pages are unnumbered. Approximately 20 pages have been used.

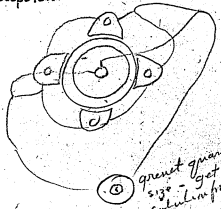
VE-172 N-88-06-26 5/4

T.A. Σ



June 26 1888

Experiments on phonograph motor multipoten




CP Wax - Knife angle 38 @ 40 -
004 depth of Cut.

Measurements by Kennelly

Cell 1.8 volts

Resistance of Motor Complete still

.34 — The field coils are 2 in series & then the 2 in Multiple, governor magnet ~~also~~ out of circuit — Rheostat 1.25, Res armature .4

Turning off .004 -
Speed 132 not governing
3.34 amperes
1.46 volts at Motor terminals
4.67 watts, or 207 ft lbs in Motor

---

Spectacle up everything running
Speed 172
3.15 amperes
1.5 Volts across motor
4.72 watts 209 ft lbs in motor

---

Spectacle moving
Speed 144 -
3.21 amp
1.49 Volts
4.78 watts 212 ft lbs

Resistance Present coil. -14 ohm
Emf 1.994-

Field Coils all multiple used 10 amper
motor scarcely runs.

Motor Coils in series. 1 coil.
does not run it more than 40 Rev running
off-

Motor Coils series 2 coils -
3. amp - 3.2 Volts on Motor.
running off 004 — 2nd Reading
3.05 amp 3 Volts.
395 ft lbs. Speed 184

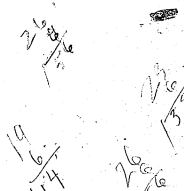
governed way down loss —
possible speed 102. 2.8 amps
2.95 Volts

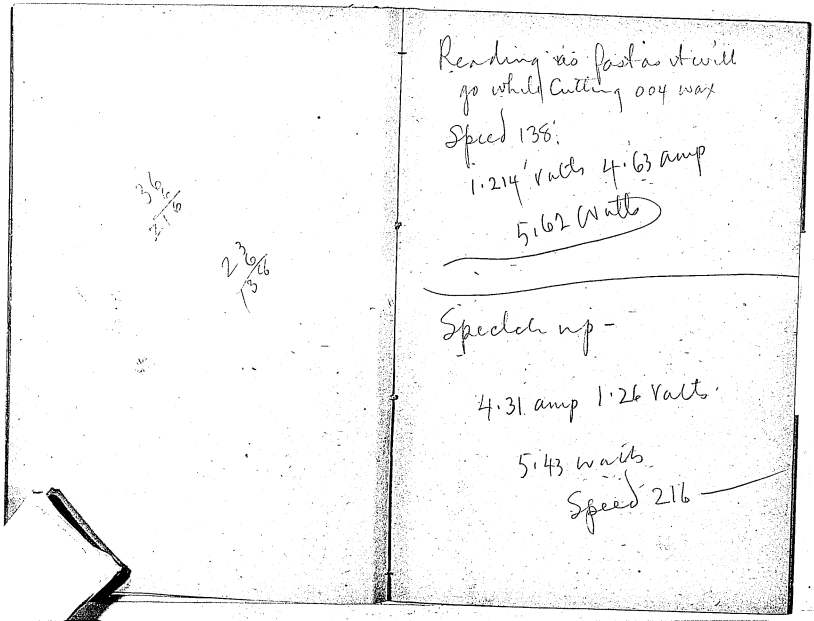
Motor - drake single turn
field in series 3.59 now
2 series 2 m.a. .9 ohm -
.004 way turning speed 156 -
amp. 4.73 - 1.18 volts
5.588 watts -

Regulating
Speed 138 -
4.8 amp 1.15 volts.
- 5.5 watts.

Measured
Brd

Regulating slower speed 114 -
4.84 amp 1.17 volts
5.66.




Reading as fast as it will go whilst cutting 004 wax

Speed 136.

1.214 volts 4.63 amp

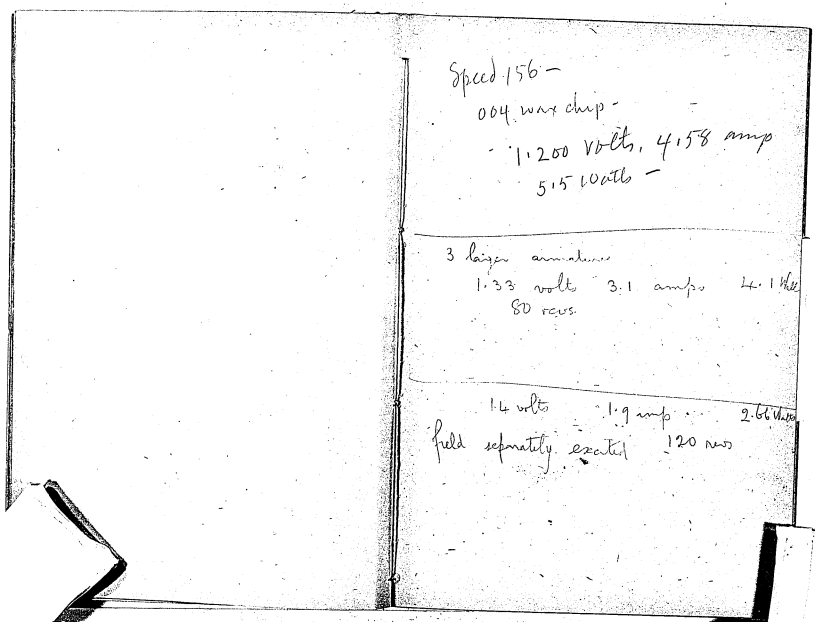
5.62 Watts

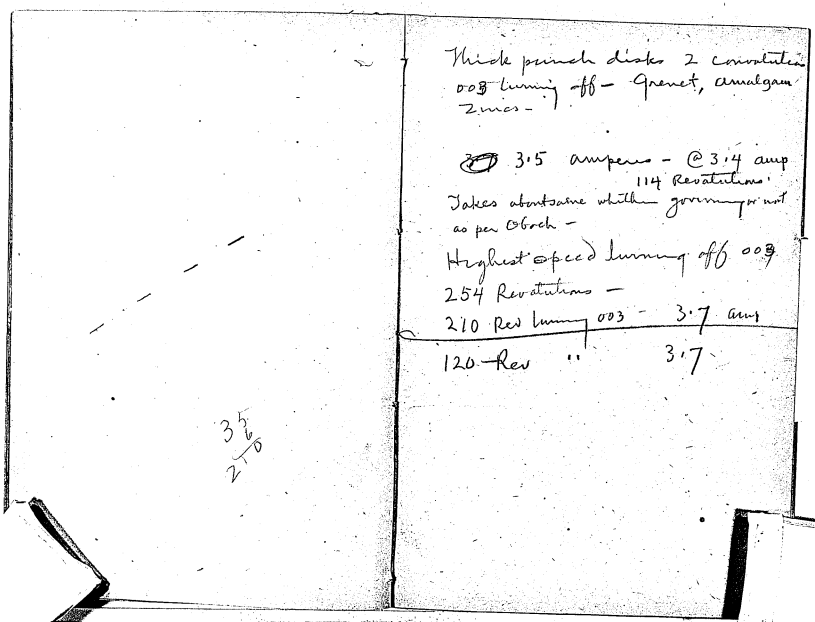
Speeded up -

4.31 amp 1.26 volts.

5.43 watts

Speed 216


Speed 156 –
004 max chip –
1,200 volts, 4,158 amp
5,15 watts –
3 layer armature
1.33 volts 3.1 amps 4.1 KW
80 revs.
1.4 volts 1.9 amps 2.66 Watts
field separately excited 120 revs



Thirde primeh disks 2 commutator
003 burning off – Garnet, amalgam
2 mos –

3.5 amperes – @ 3.4 amp
114 Revolutions
Takes about same whether governor in or not
as per Gbrch –

Highest speed burning off 003
254 Revolutions –
210 Rev burning 003 – 3.7 amp
120 Rev " 3.7

35
210

Punched disks 3 convolutions
(bell) 3 to 1 -

2.6 amps turning off 80
Revolutions governing -

Motor alone with pinion
disconnected 2 amps
as per table 1.2 this leaves
.8 amp to run motor equal to
180 Rev of pinion -

Motor running (alone governing)
250 of photo heads.
2.1 amp

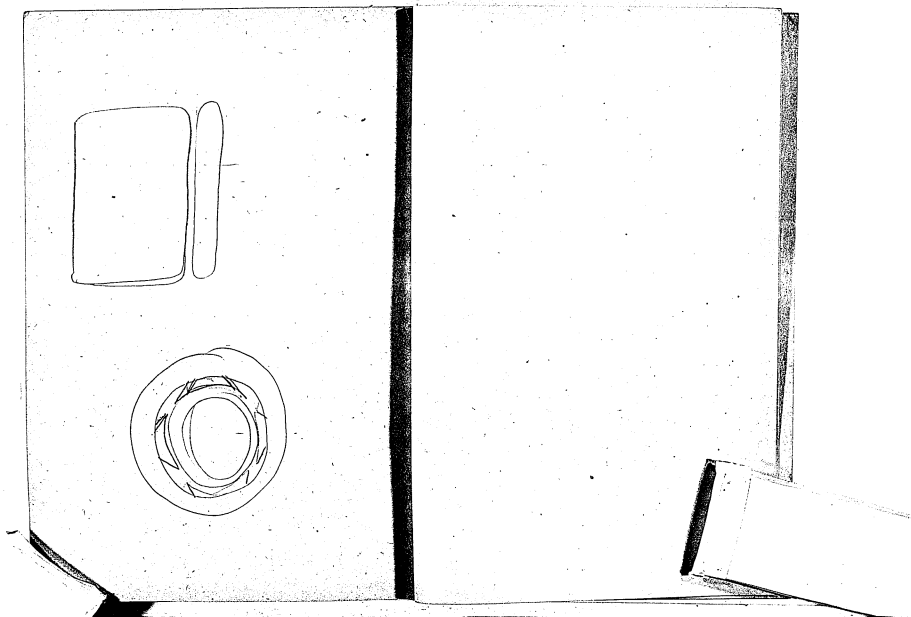
138 Rev turning off heads
2.6

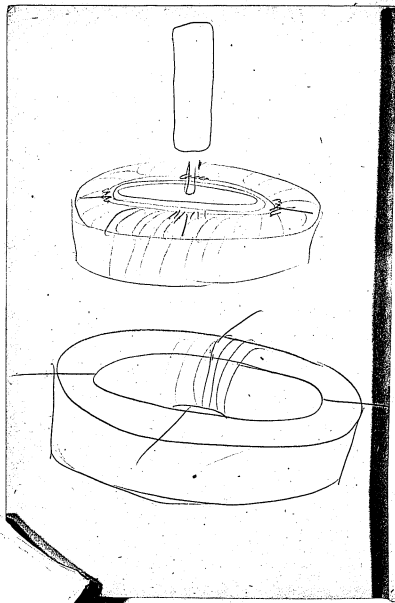
at 102 Rev turning off + governing rheostat 2.5

Solid Ring 3 Revolutions
turning off
pulley 3 to 1 — same plane
Rev. 84. 2.6 amp-
96 Rev not govern 2.8
Motor blocked 3.1/2

Weight of Zinc 379 Grams

Salad ring 3 Cornelius
2.13 - turning off not going
go Revs

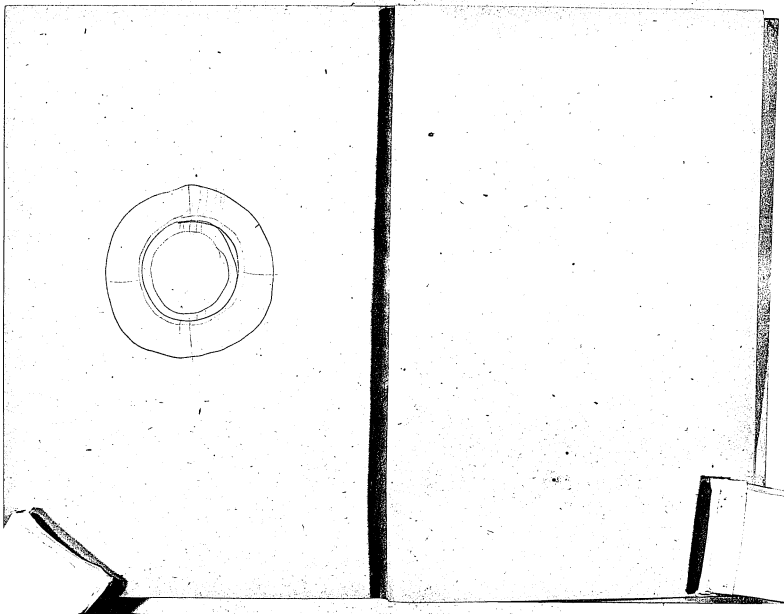


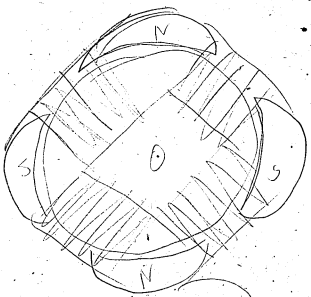


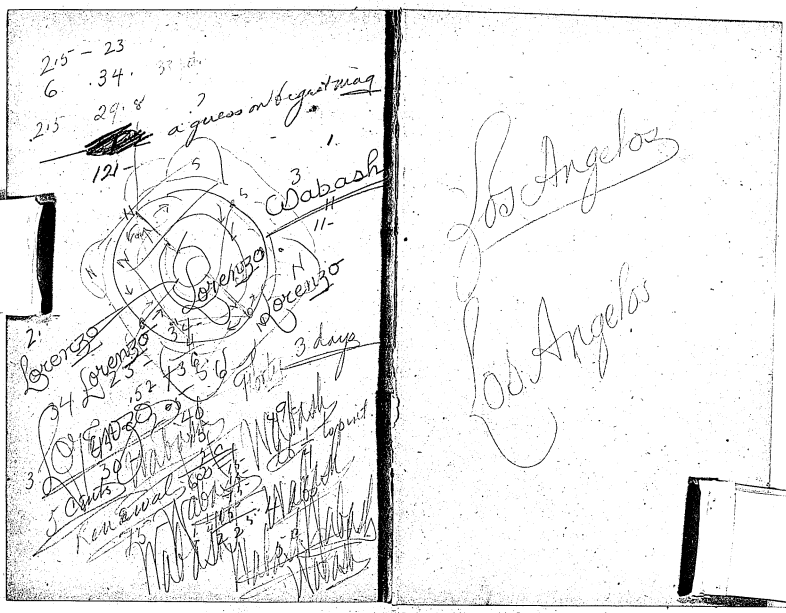
6

36 Cu Inches
30
1080

3 feet
144
3
432
-
532




N
S
S
N

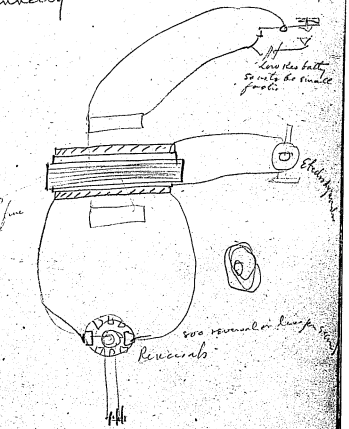

Wabash
Lorenzo
Lorenzo
Lorenzo
Lorenzo
Lorenzo
3 days
Los Angeles
Los Angeles

**Notebook, N-88-09-13**

This notebook contains dated entries primarily from November 1888; there is also one entry from September 13, 1888. All entries are by Edison and relate principally to the cylinder phonograph. At the beginning of the book are illustrated instructions to Arthur E. Kennelly regarding alternating current experiments and a set of notes concerning filament experiments. The pages are unnumbered. Approximately 160 pages have been used.

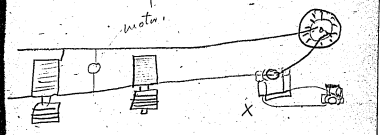
N-88-09-13

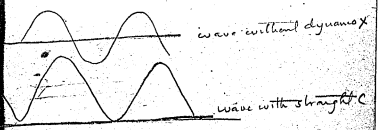
Kennedy — 4




See if magnetic a Corr of induct
Coil that is rapidly alternated) changes
the. transform. Coronally or changes
the depth of the displacement

If it doesn't change the transformer
[illegible] than it is possible to
working Continuous current motors
on alternating Circuits.




simply changes the zero line.

Act on filo with the high asphalt
Dimocs Carbon with Hydrafluoric
acid in dea dish / dilute + ~~stirring~~
stirring hot + cold also time then
dry + burn for ash —
also ~~Carbonyl~~ use preliminary
+ treat in Cond'd Hydrafluoric
perhaps so much $H_2O$ taken
out by preliminary that it
will not gelatanize fabric +
ash will be removed if so
soak w/ hot 1 Carb Reg + test
life -

Carbonyl in closed tube
in dry phosphoric Anhydride
slowly to 400 then explosion
up high vapor pressure —

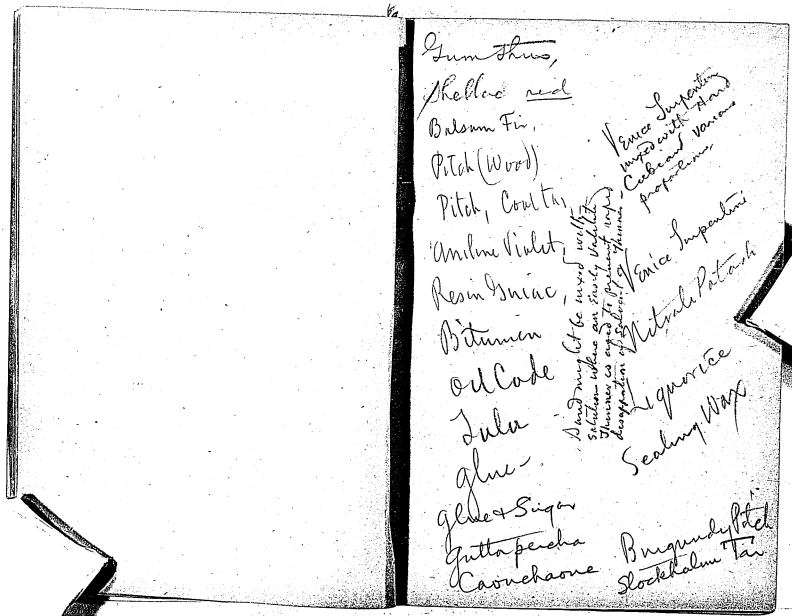
In addition to the substances given 15 days ago add these.

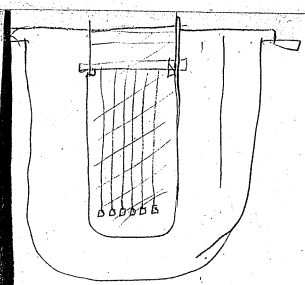
Asphalt getch that English get:
Sulphur dissolved in the asphalt with linseed oil,

Syrupy solution Perchloride Iron
" " " Tin,
Sulphide ammonium.

Bromine,
Iodine,
Fusible metal,
Perchloride Phosphorus Sealed tube
Bromide Aluminum 90 centigrade
Tribromide Antimony 90 " "
Tri Iodide Potassium 45 " "
Iodide Sulphur 60 " "
Ferrous Sulphate 64 "

Sodium Metaborate melt. 57 C
" phosphate 74 C
" Shcaik, Walington
Naphthaline
Rosin,
Dammar -
Succinnic acid -
Chlaride Zinc in Linseed oil,
Olive Oil -
Olive oil + asphalt,
Hard Cubrain in Turpentine
Hard " " Rosin
Oleic acid -
Stéarine

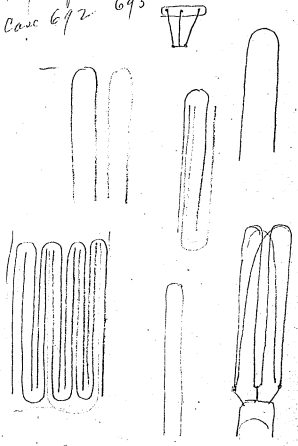

Gum Thus,
Shellac red
Balsam Fir.
Pitch (Wood)
Pitch, Coal Tar
Aniline Violet
Resin Sandarac
Bitumen
Oil Cake
Indu
glue
glue of Sugar
Gutta-percha
Caoutchaoue
Venice Turpentine
Burgundy Pitch
Stockholm Tar



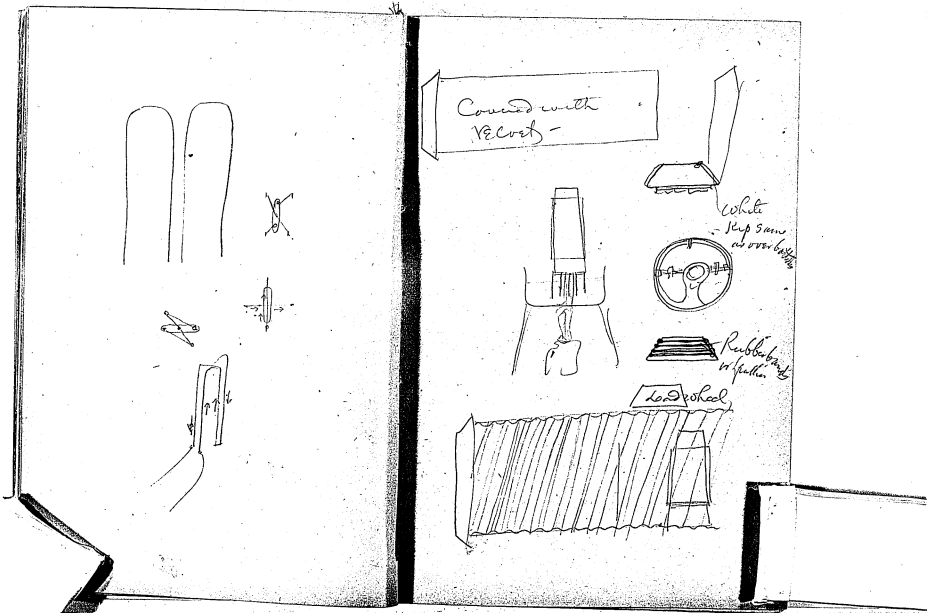
Carbon in Asphalt under stress

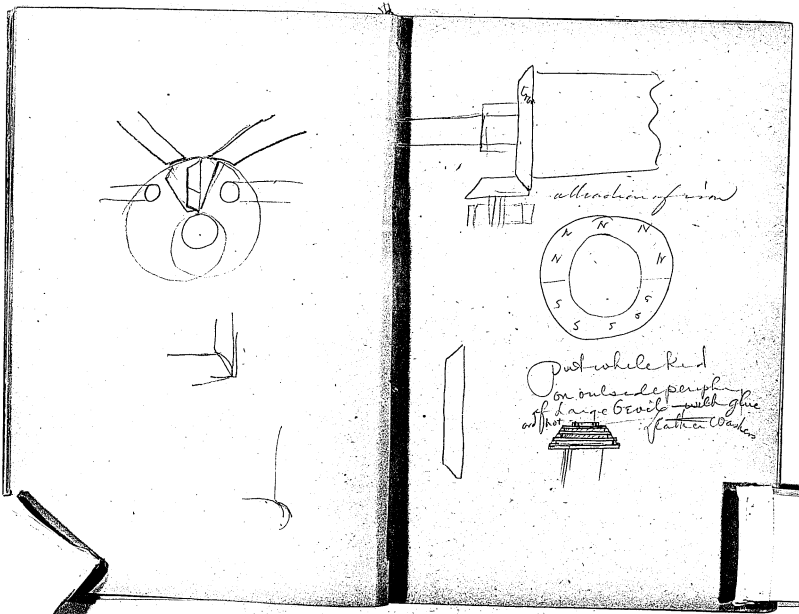
Aniline Oil,
Oil Mirbane,
Conc Sulphuric acid,
Conc Phosphoric acid,
Gum Amalgam

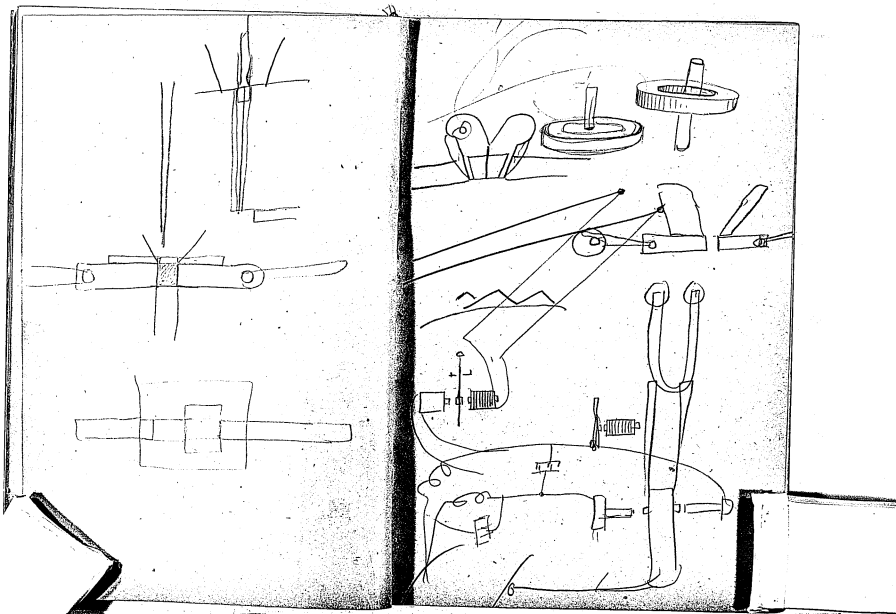
Dyer of possible get
Case 692 693



Find & repair Micrograph Relay
" " " Mirror -
" " Steel shd wire in Vacuo - Condenser -


Covered with
VE Cork -
White
- Hop saw
as over bath
Rubber band
to pull in
to Dropleaf


attachment of resin
N
N
N
N
S
S
S
S
Push whole kit
on outside perspex
of Large Circle with glue
and Nut
feather Washers



40 [illegible] daily / hour

10 75 20 feet
10
750

40 daily - 10 trench

200 feet.

100
500
5000

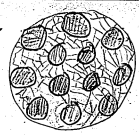
5000 sq feet

160
21
160
320
3360

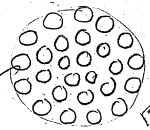
3360
21
16800
24 24 - X 6/
672000
16800 in box
100
4,000,000

75 boxes

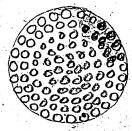
25
20
500 - 30 - 15
1000

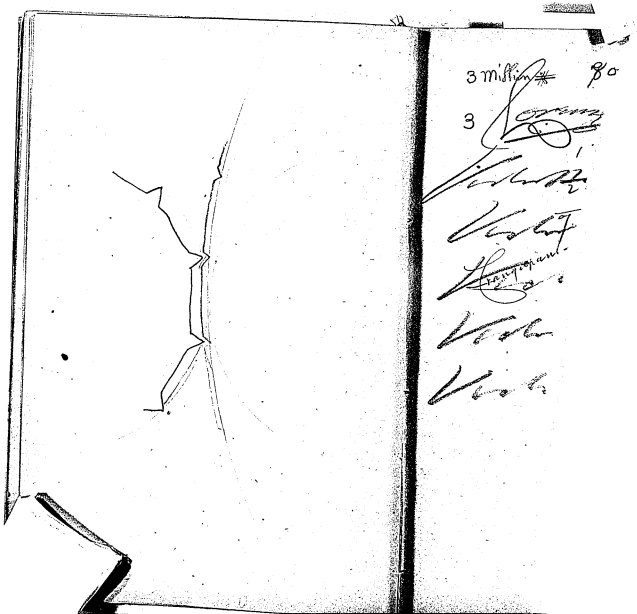


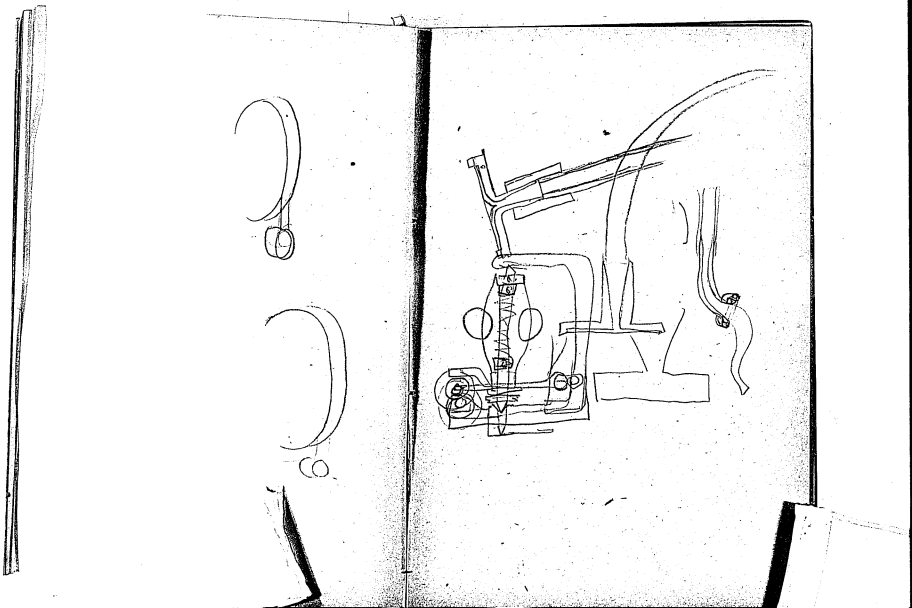
30, inch
15 inch

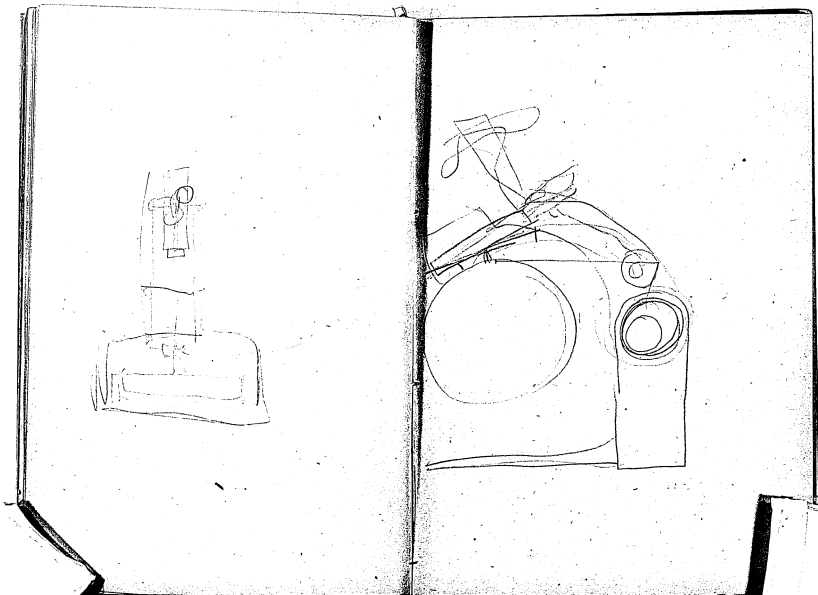


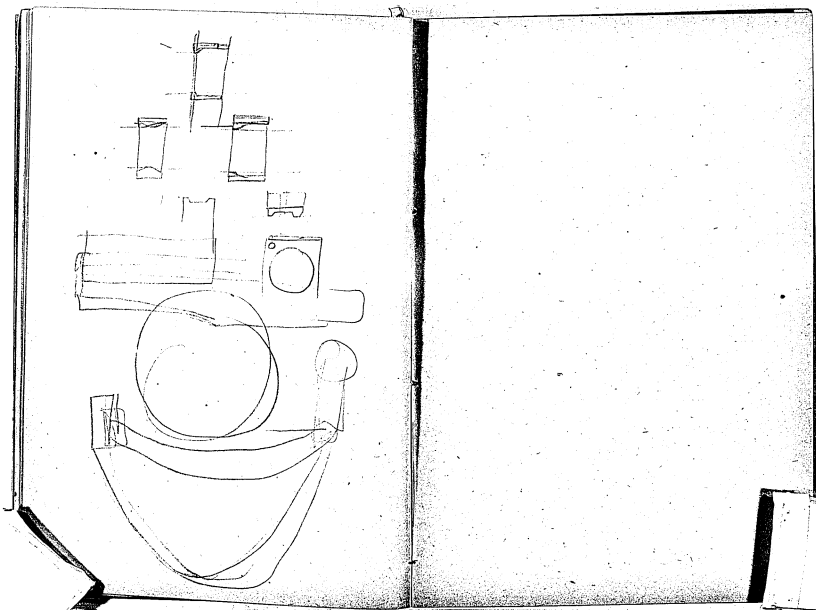
6000
6000

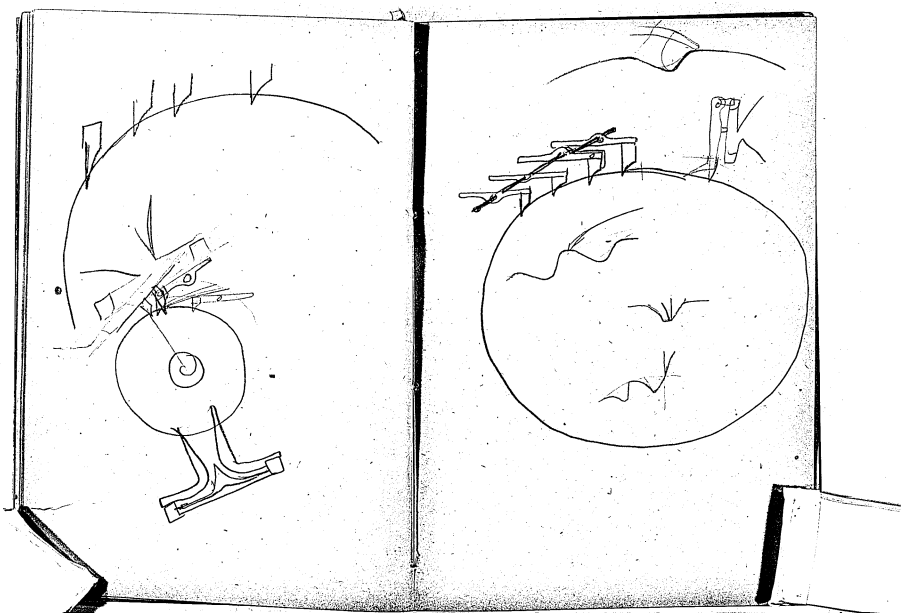


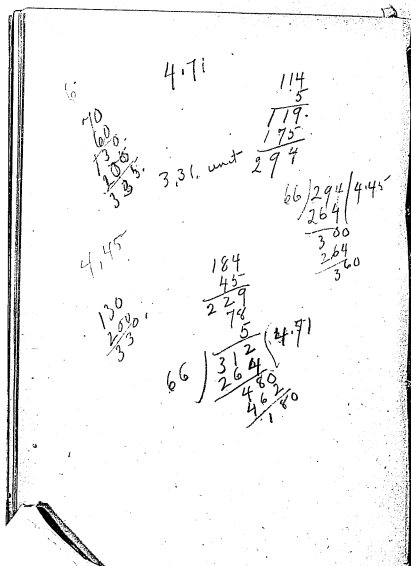


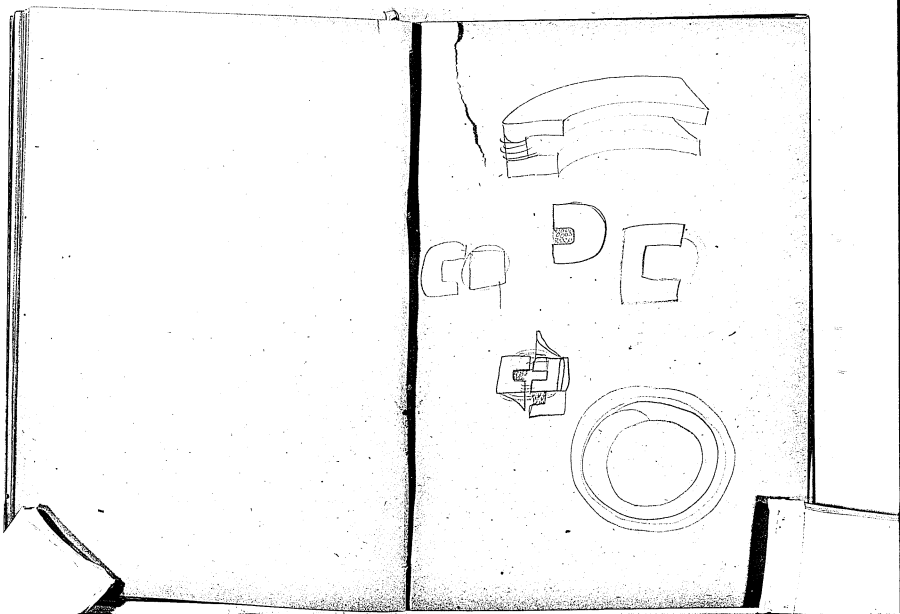


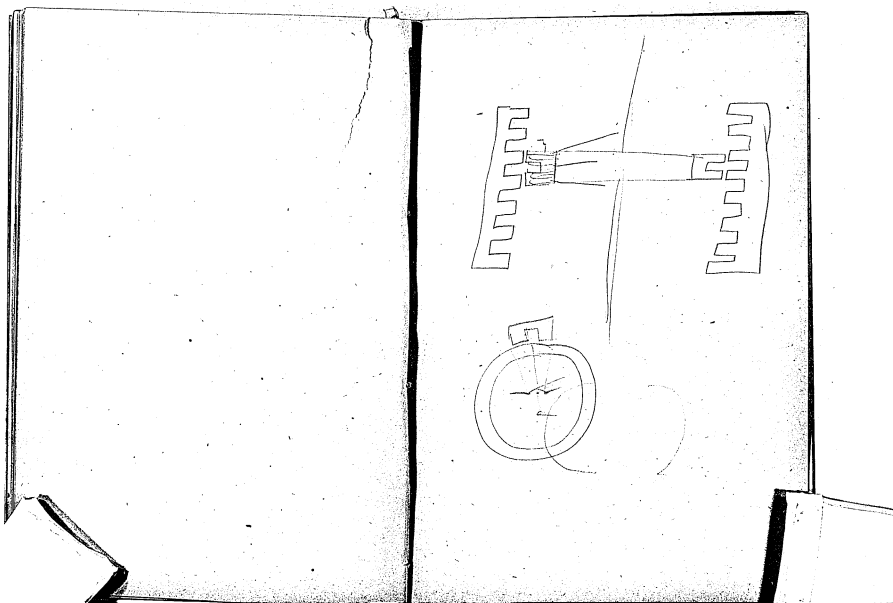


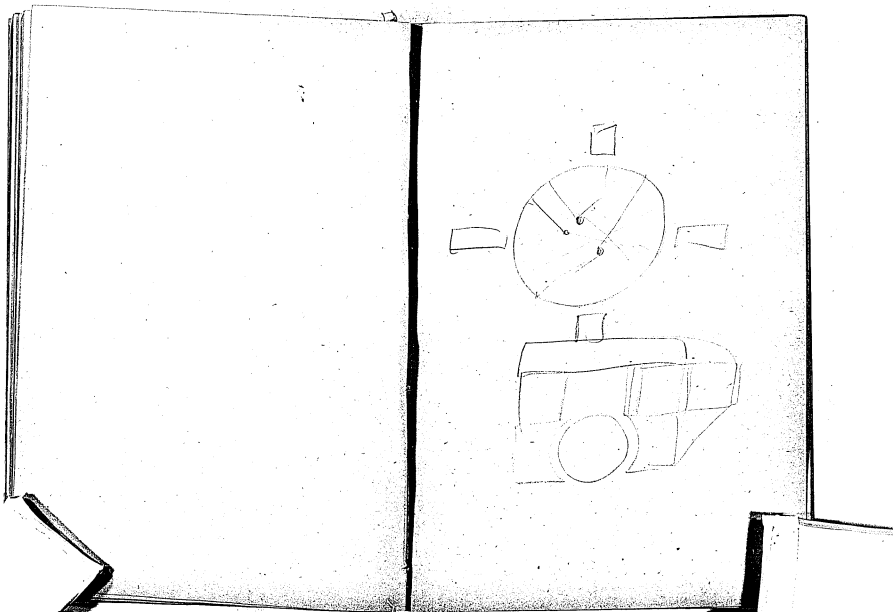


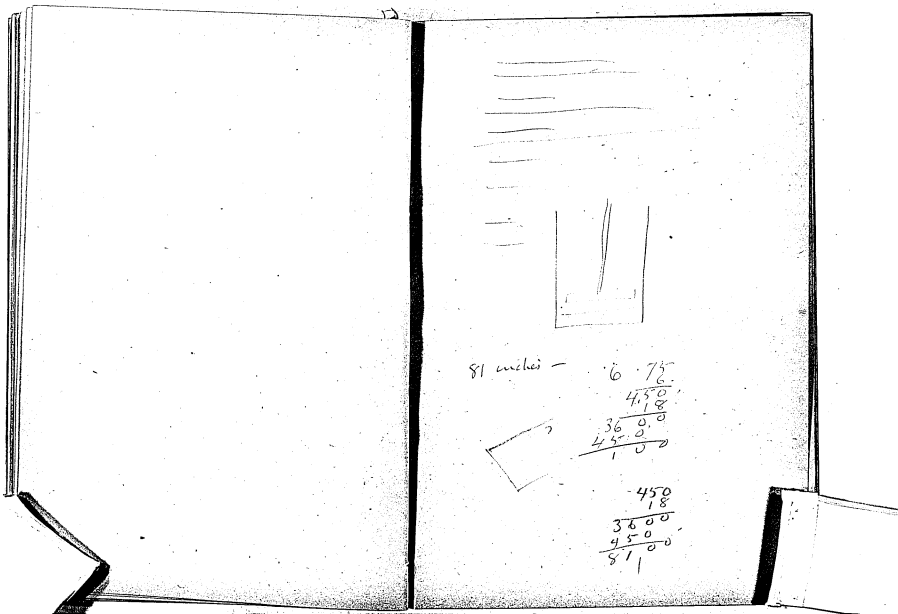


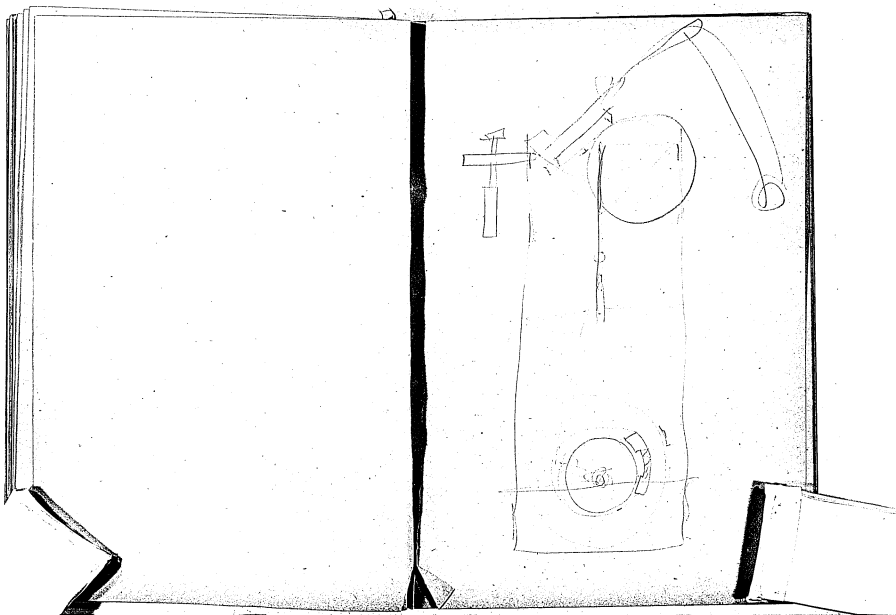


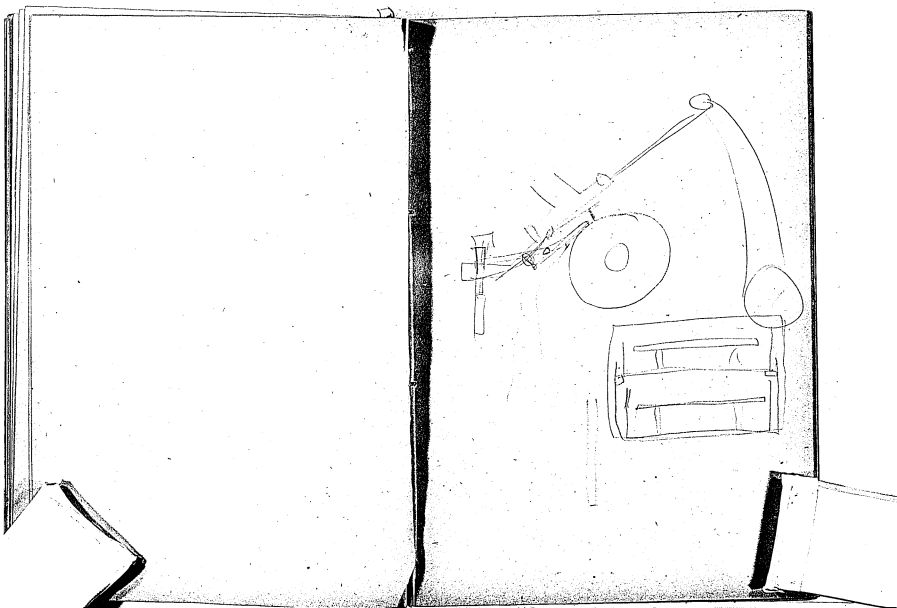


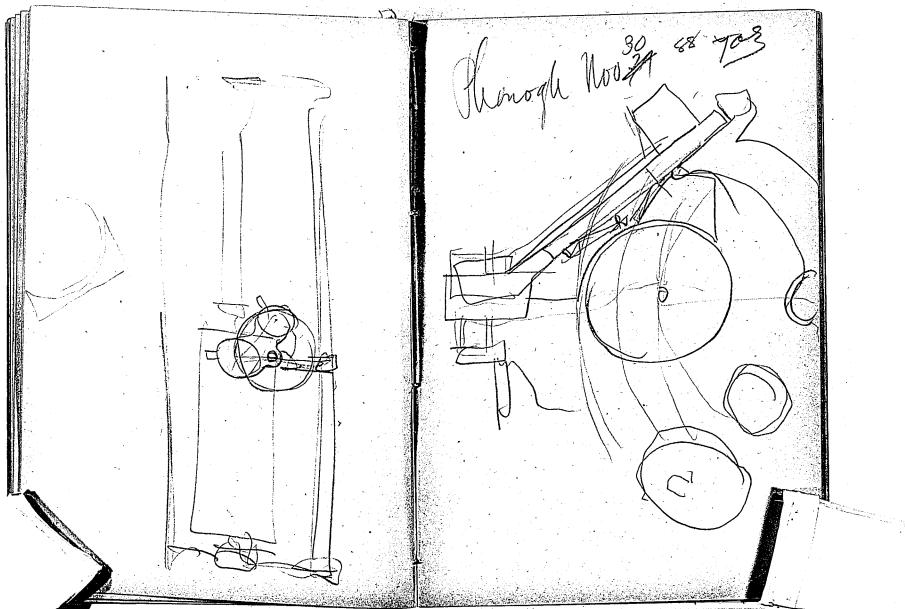


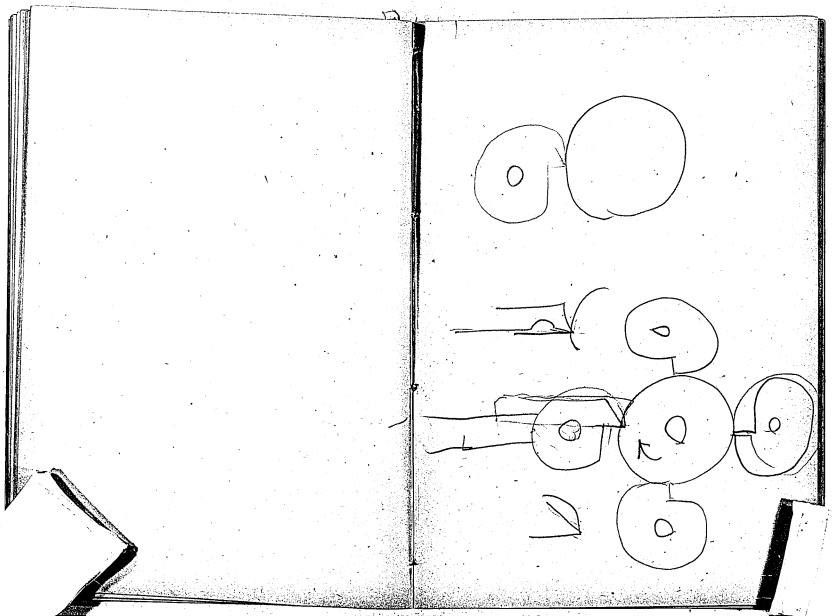


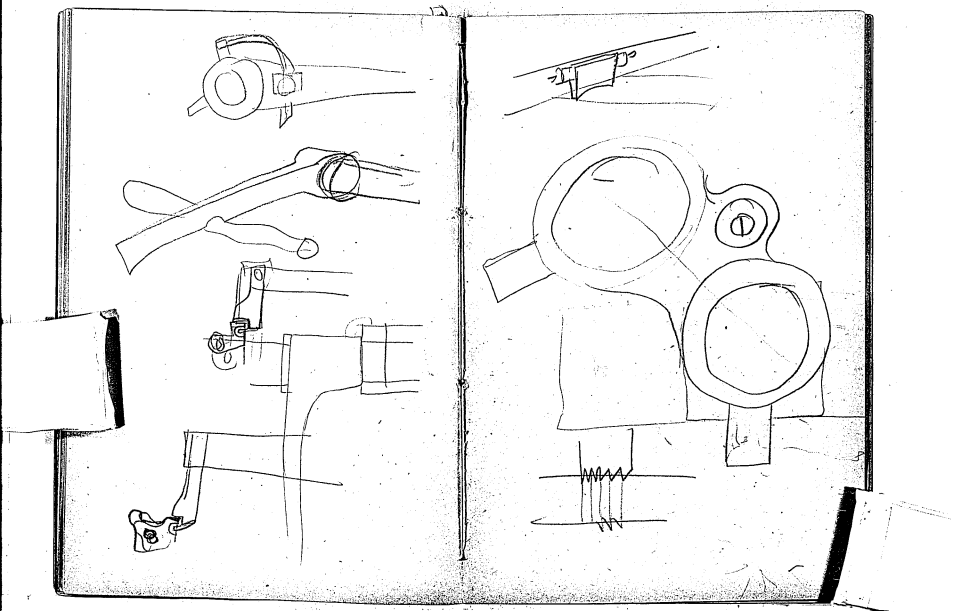

81 inches –
.6 · 75
4.50
36 00
45 0
1 0
450
18
3600
450
81 0

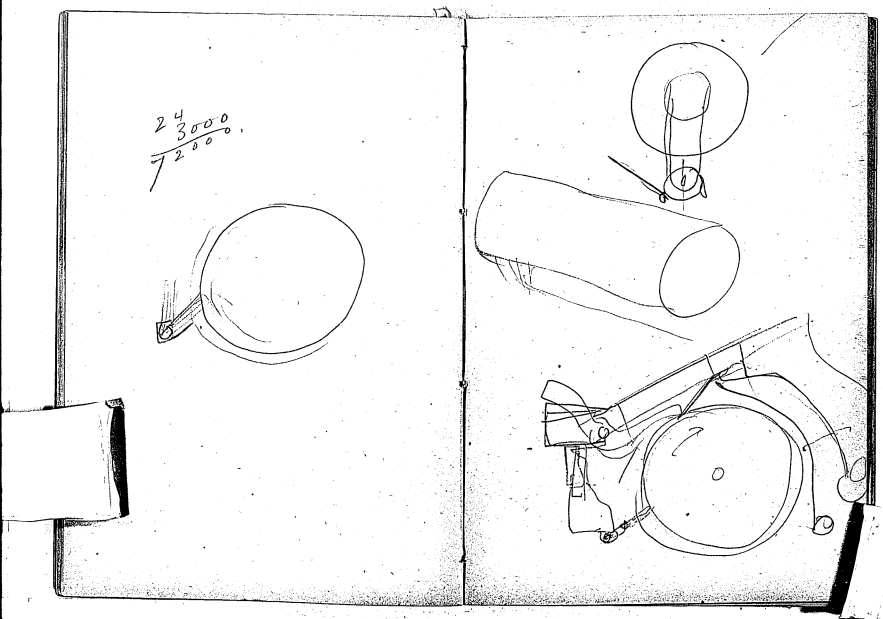





Through Nov 30 '68 '70

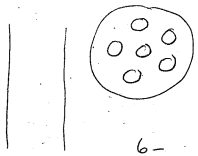





24
3000.
2200.

Act on ~~by~~ ~~transaction~~ with.

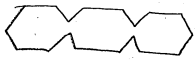
Dissolve out



100 - 6 -

64 00
18 50
50, 50

15 -
15
75
15
2, 2 3 -
6
13, 5 0,



64
24
4

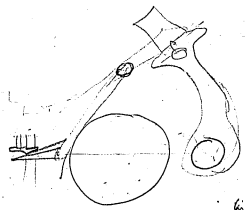
64
8
512

160.

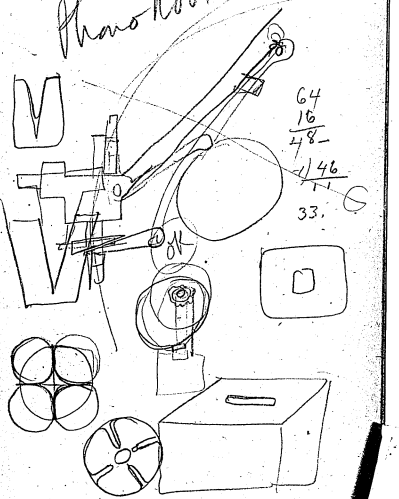
178 / 1728 /

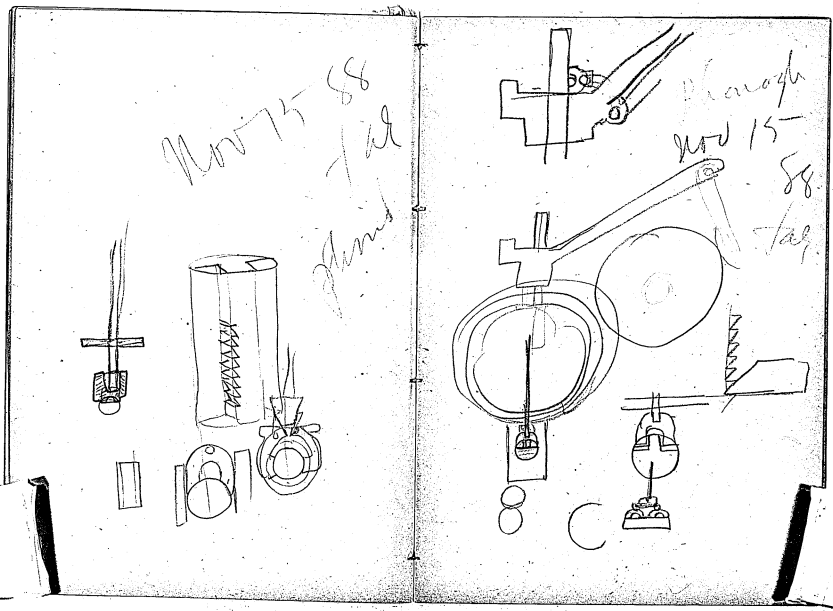
1600
60
96,000

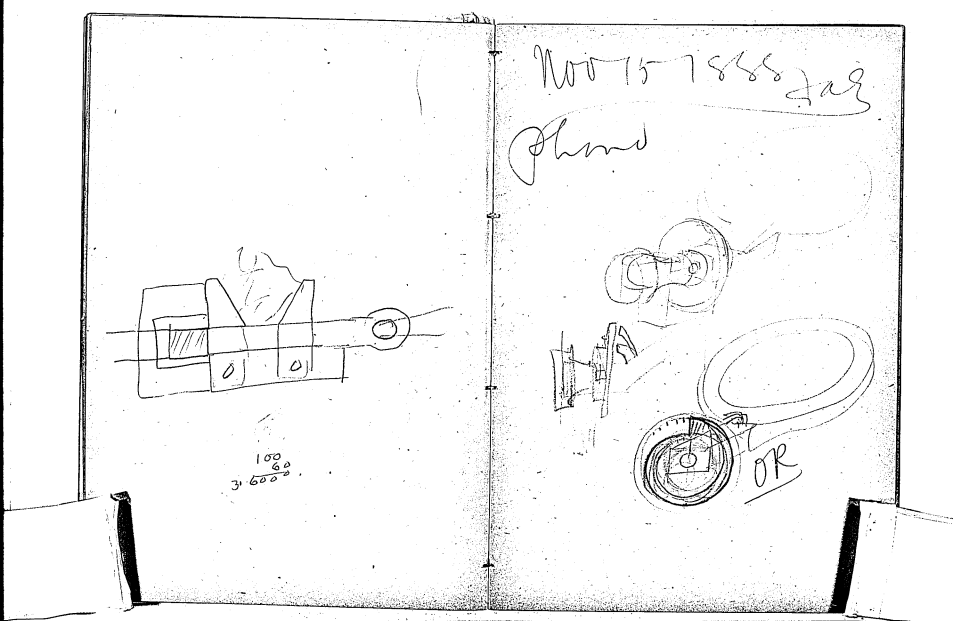
Phono Nov 15-58 TCG

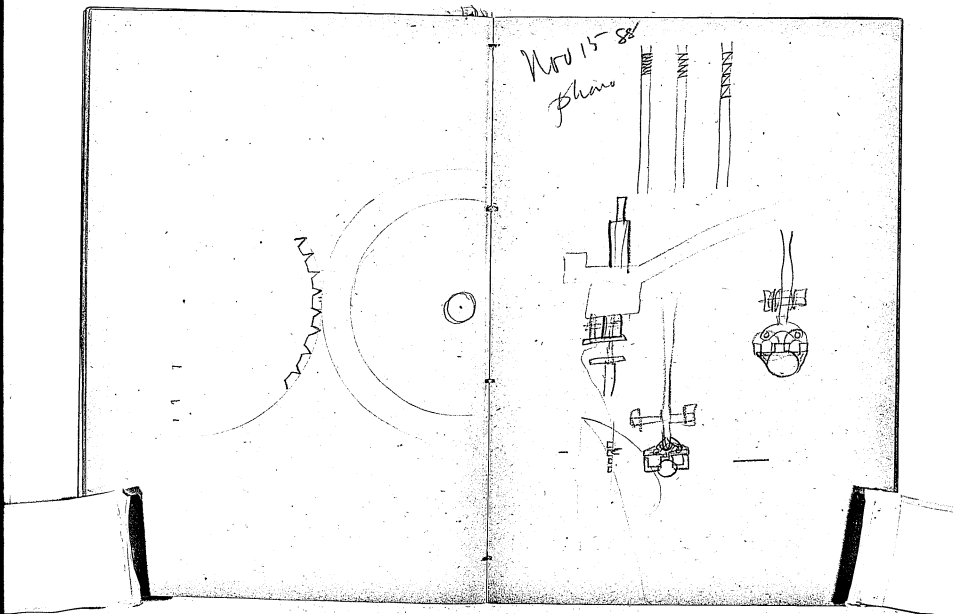


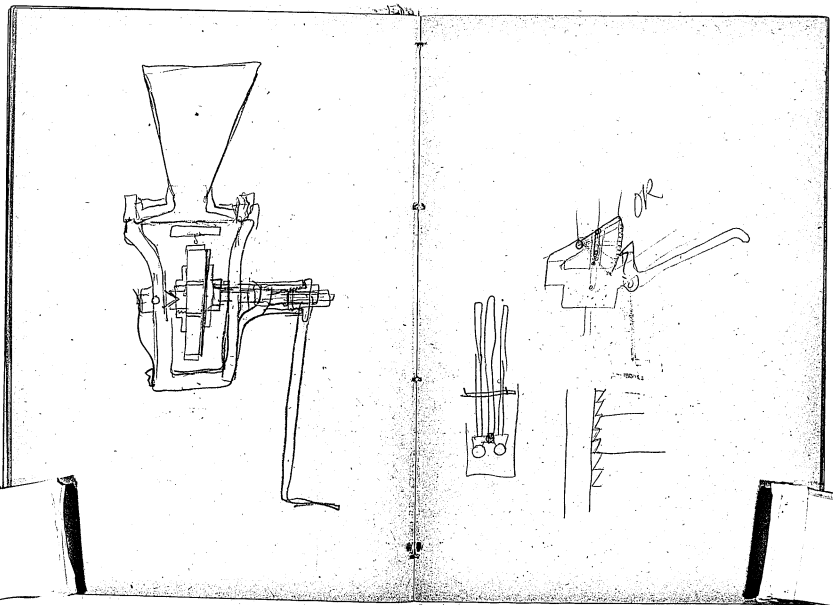
Phono Nov 15-58 TCG






Nov 15 1888
OR


Nov 15-88
Phase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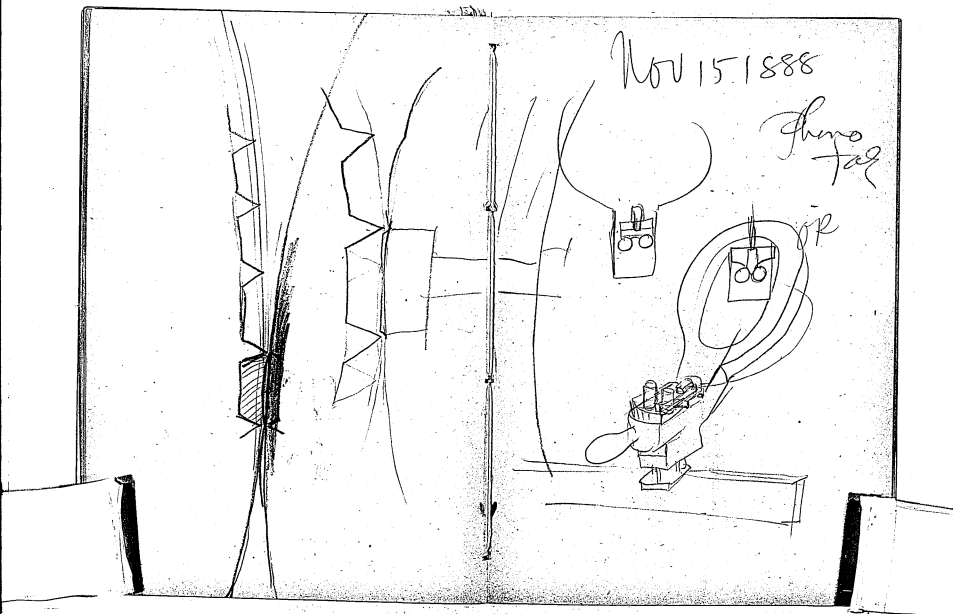
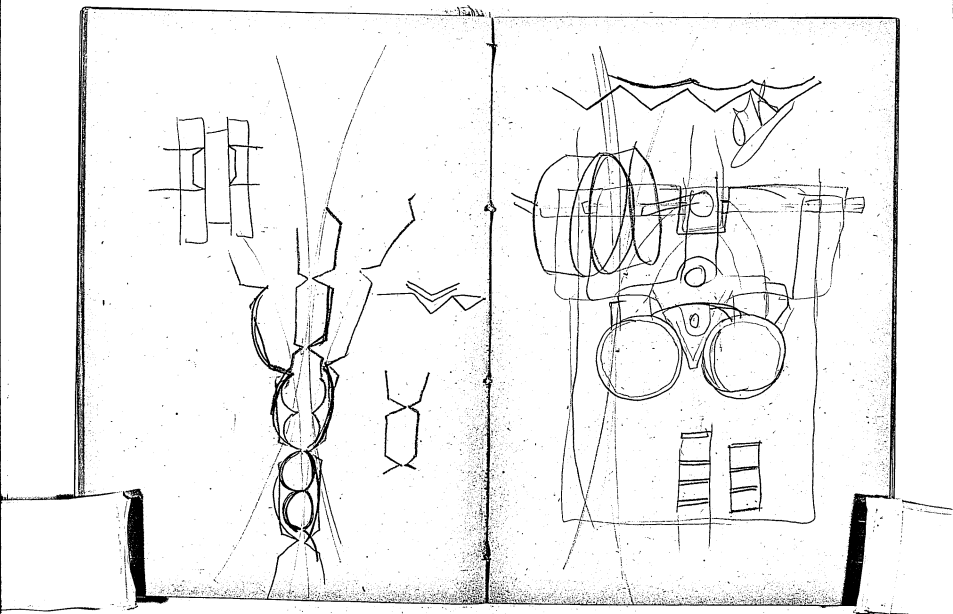
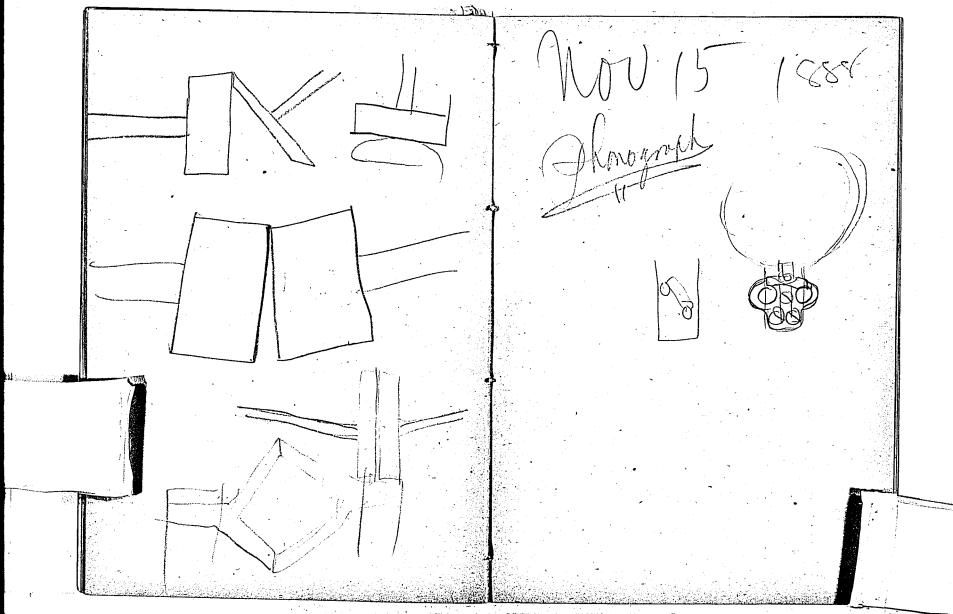
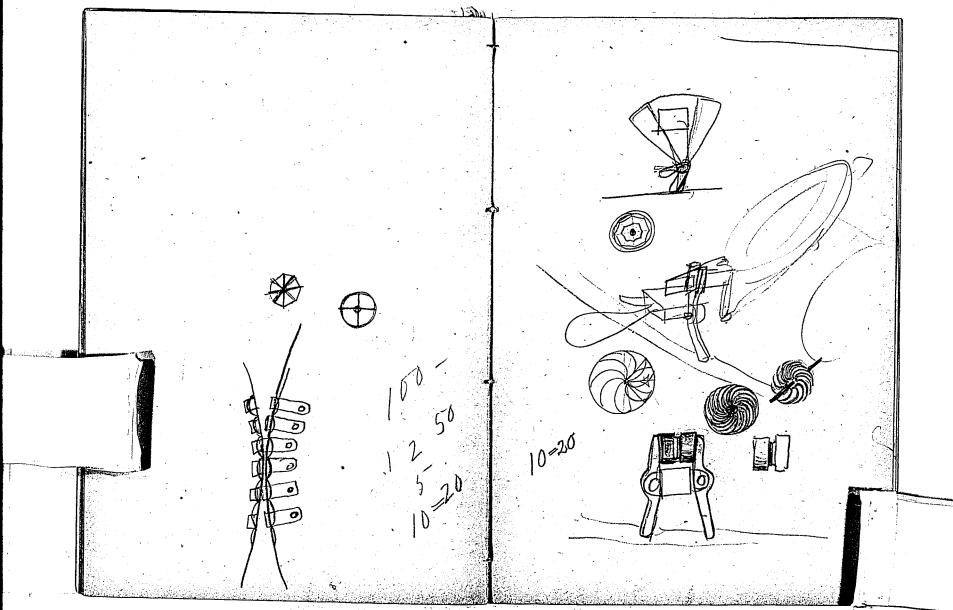
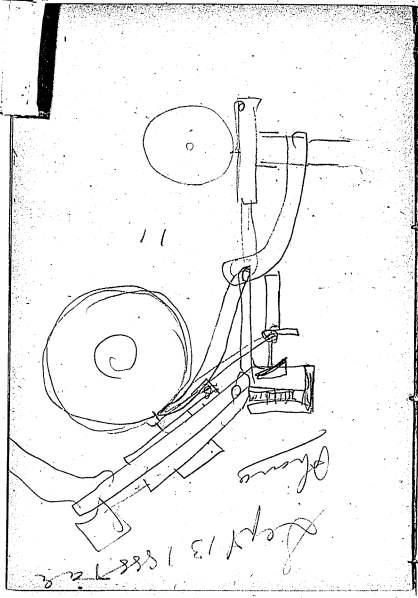

NOV 15 1888
Thomas Tate




Nov 15 1884
Phonograph


100 -
12 50
5 -
10=20
10=20

Mina
mina
mina
Mina
Chicago
Chesapeake
Ohio
MINA MINA MINA



ANIM

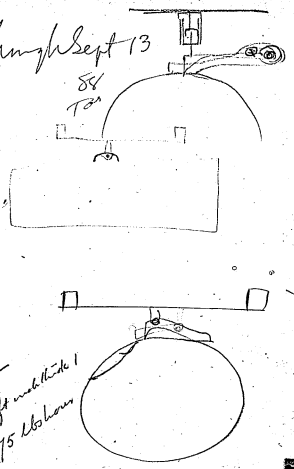
MINA

MINA ANIM

ANIM

Plumb Sept 13

SK
T&S



60 —
6 ft wall thick
75 lbs/sq ft

450 —
62 —
512
496
160
124
360

62 | 8125 —

600 lbs per hour 1 foot 4 — 1/4 inch thick

1200 lbs hour bottle 2 ft — 1 foot. 60/120 — 1/2 1.

1/2 ton hour per foot 3.75 — 100 200 375 —

160 ft. 80 5 — 60

546

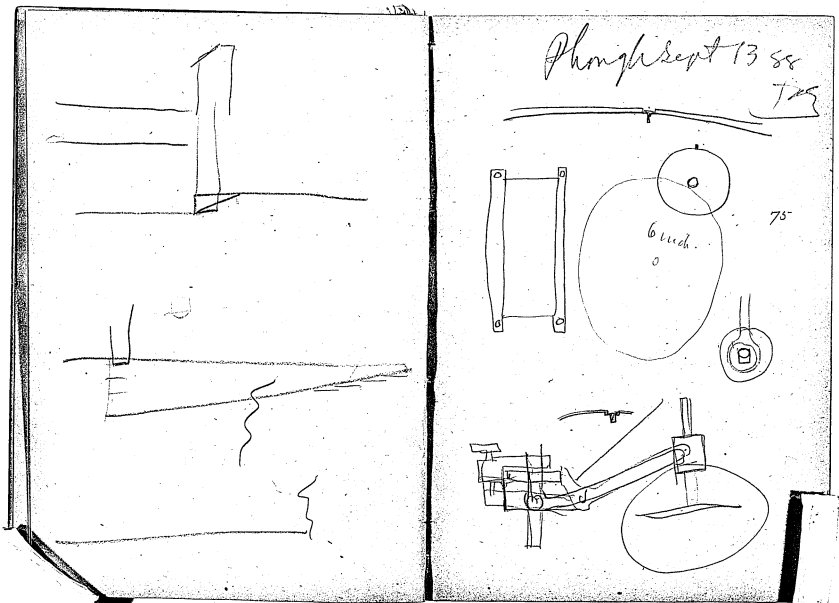
4 inches wide = 20/1000 deep
3 foot Rebfed
1 foot wide - 5 lbs per sq ft
500 — lbs/sq ft

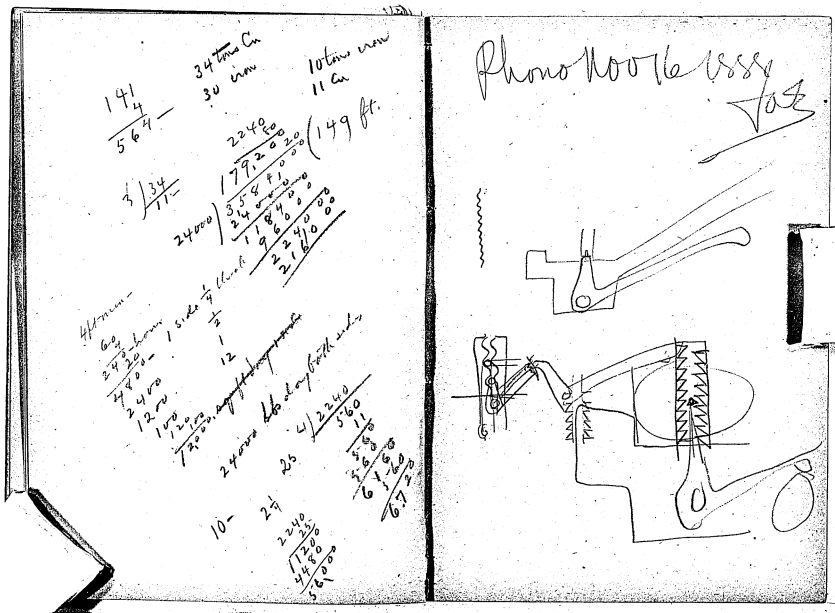
50/1000 —

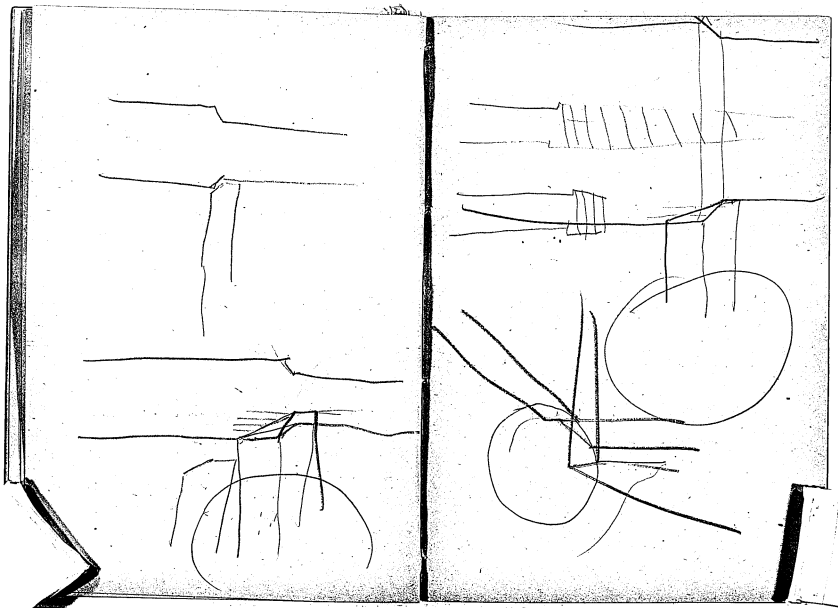
17 — 1.
35.

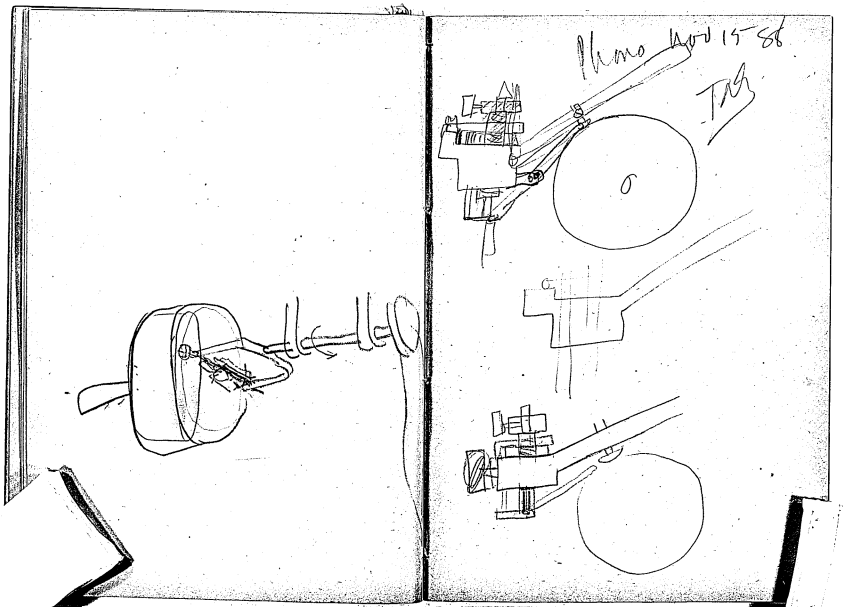
1200 —
240
480
60
1000

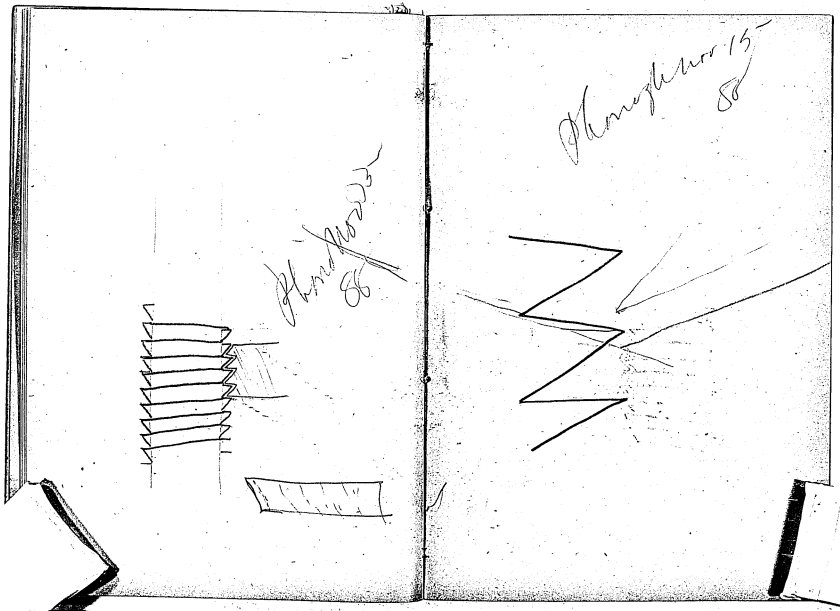
2 8 40

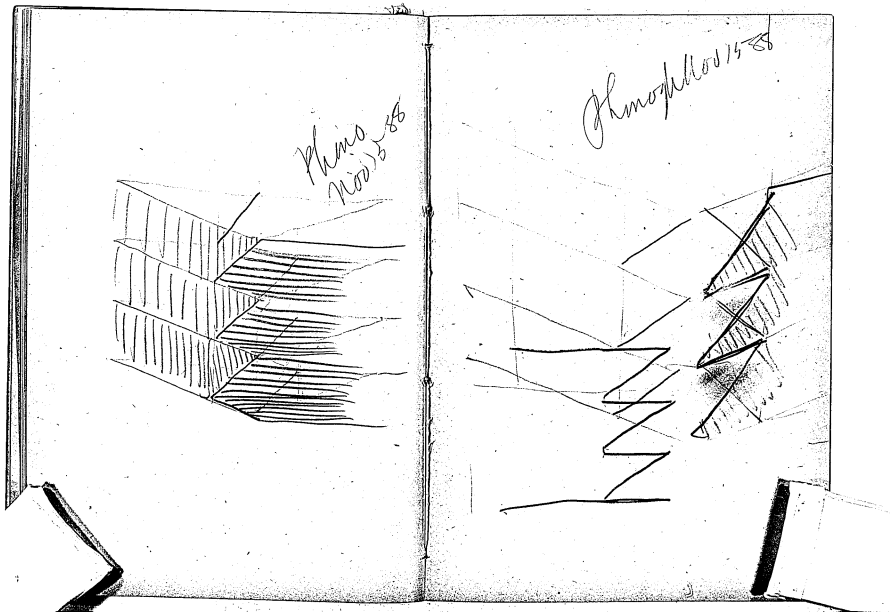

Phonograph Sept 13 88
6 inch.
75

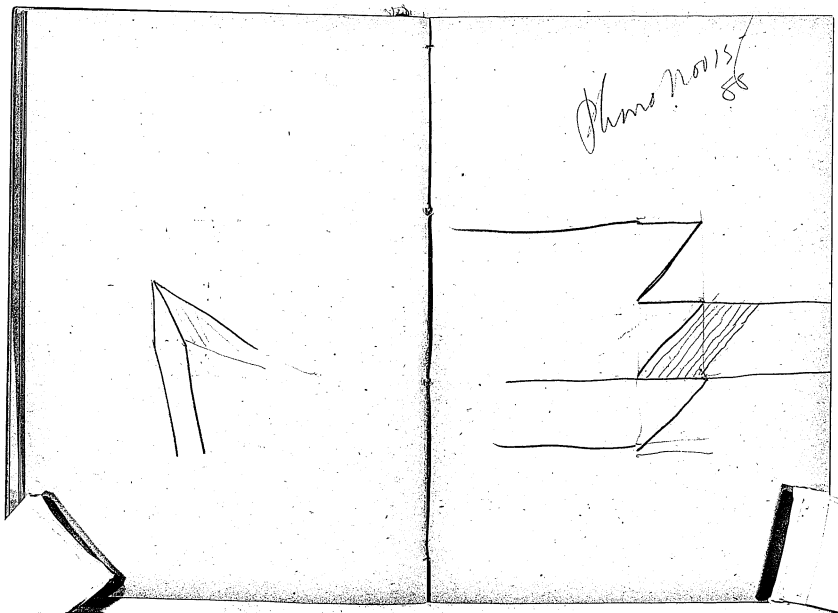

Phono Model 1556
Jack

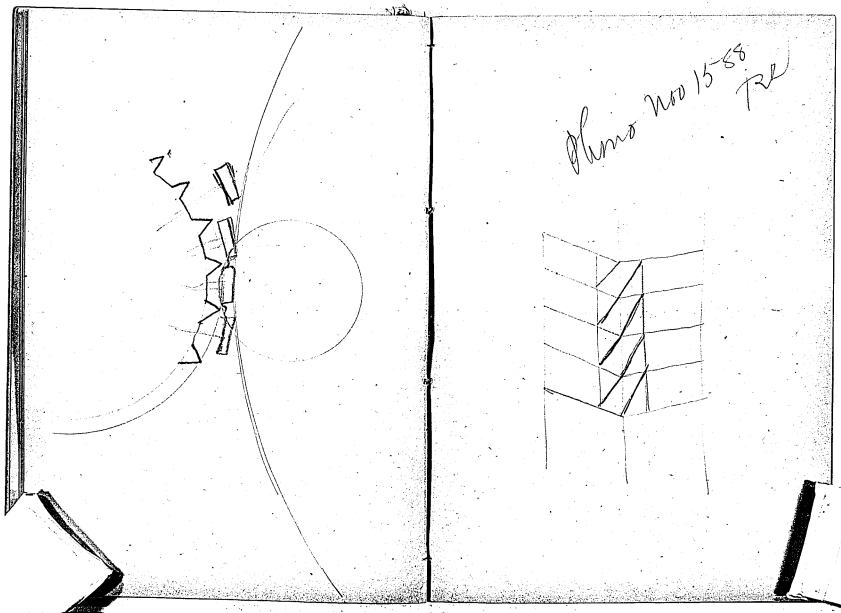


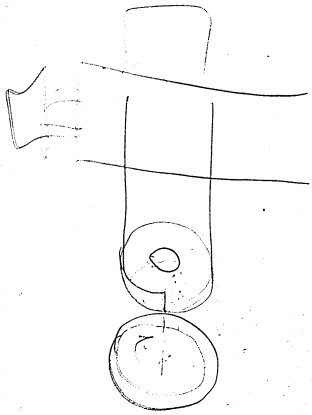

Memo April 15-88
TAG



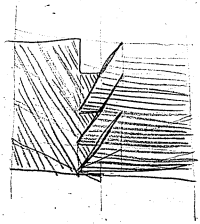

Rhino
Nov 15 88
Rhinoplasty 15 88

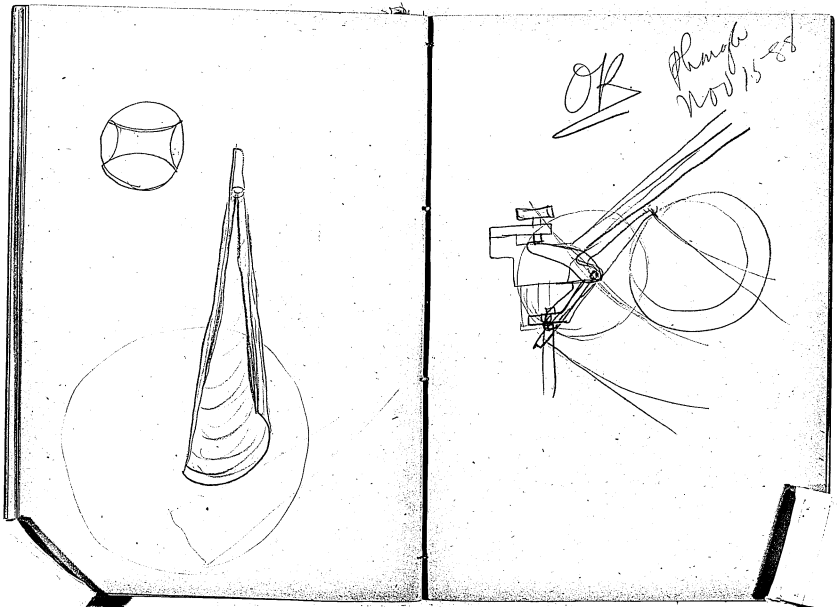


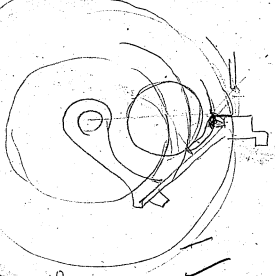

Plano No 15-58
TRL



Pharmacology 5-68
Tag




OR
Phuoc
Nov 15-88



5240
220
1048
10480
1152840
1152120
46112

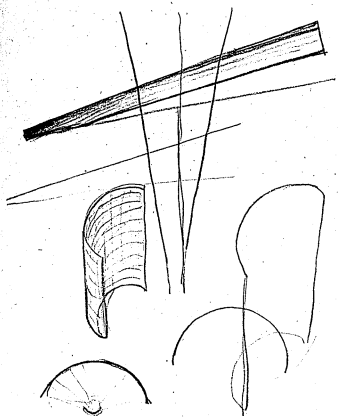
3

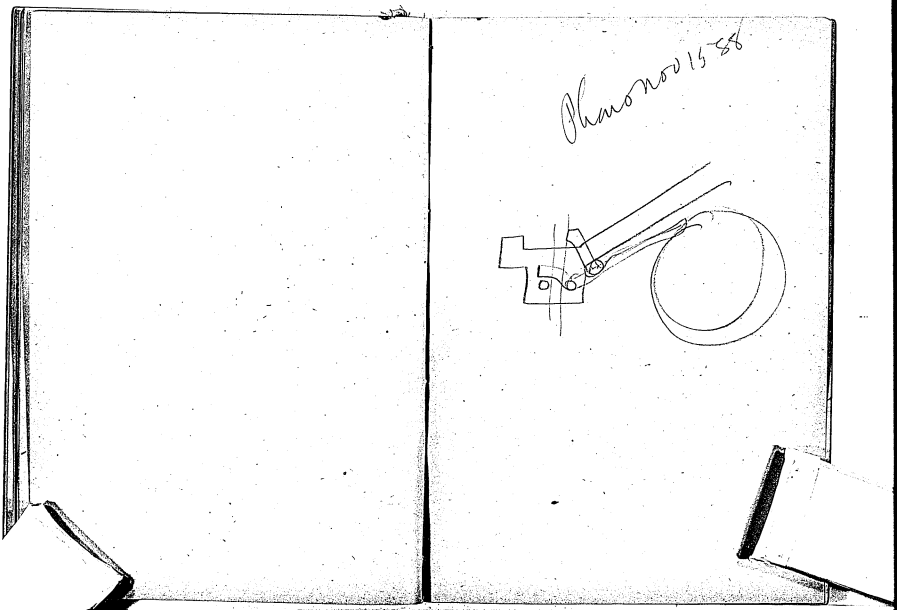
4

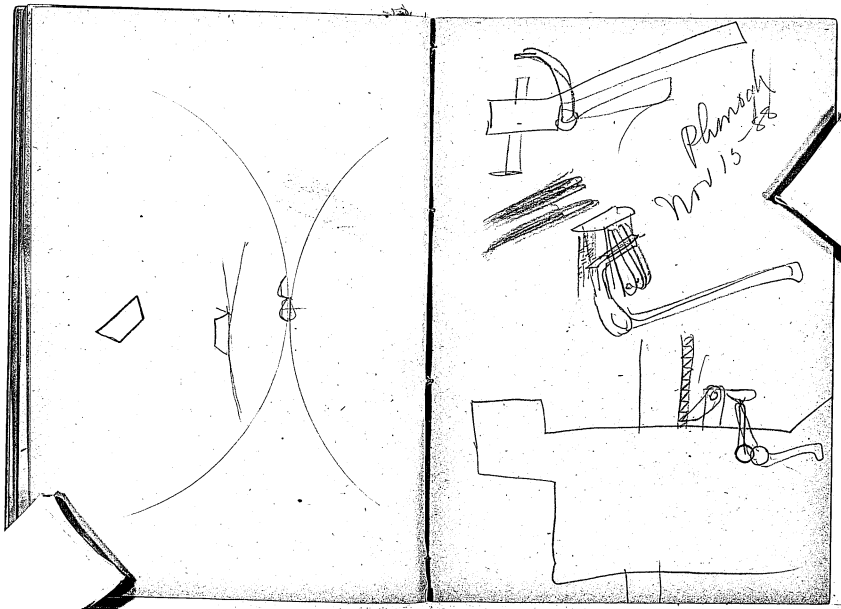
91
January

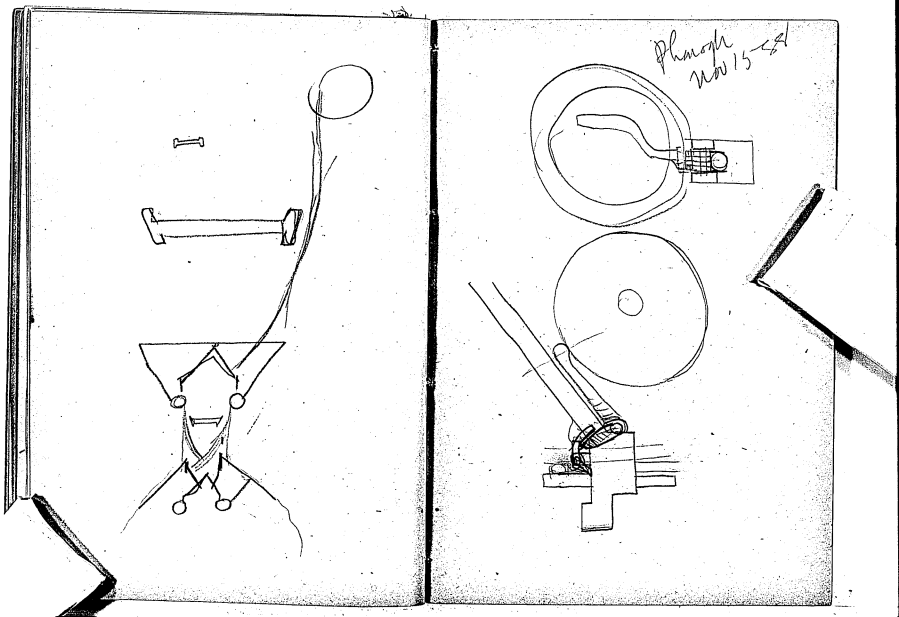
461000
92200
4

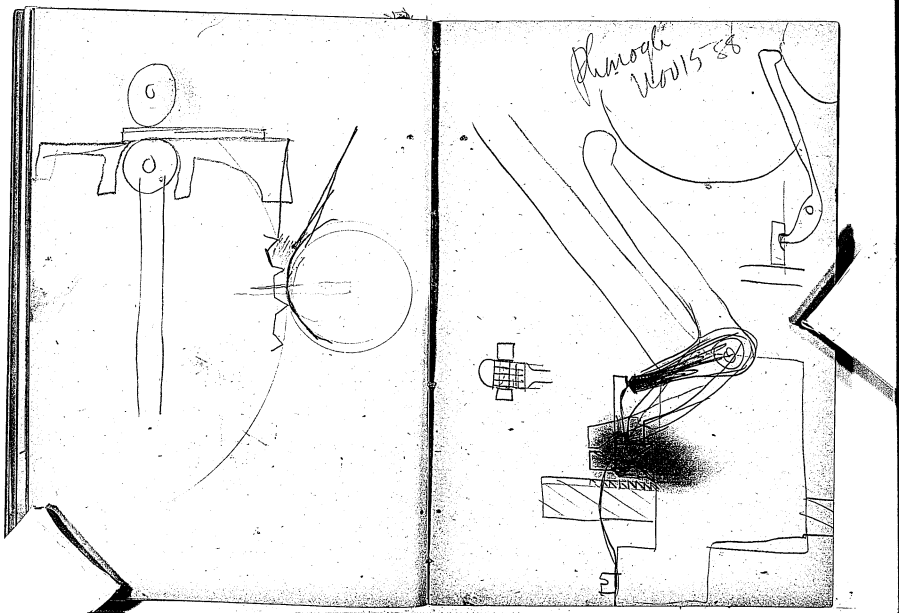
13
17
68.



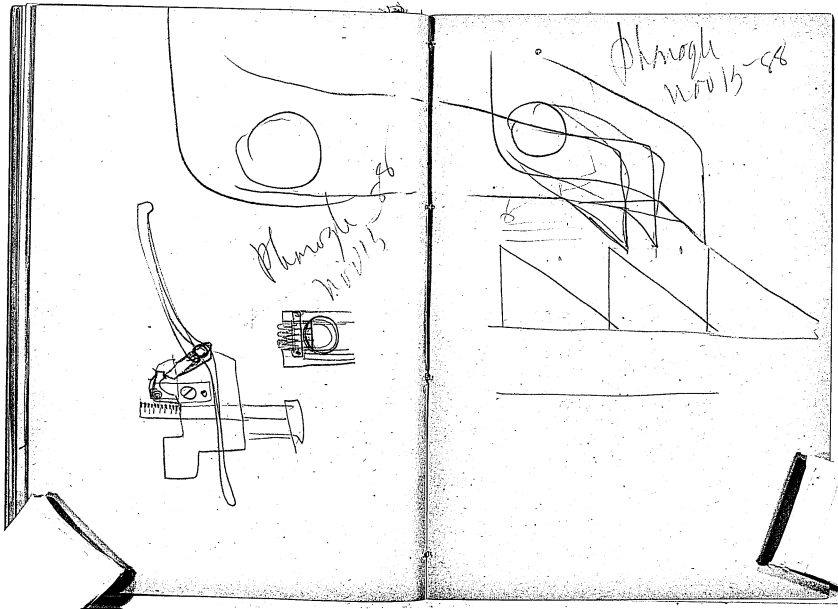



Plunger
Nov 15


Phonograph
Wax Is Cut


Photograph
11/15-86

Plumpf Mills 1886
150 — 76
35'
140'


Through
Through

Arsenic
Aluminum
Antimony

Barium
Boron
Bromine
Bismuth
Columbium
Calcium
Cadmium
Caesium
Chlorine
Cerium
Copper
Cobalt
Didymium
Oxygen

Erbium

Fluorine

germanium
Gallium
Glucinum
Gold

Hydrogen

Iron
Iodine
Iridium
Iridium
Kalium or Potassium

Lead
Lithium
Lanthanum

Molybdenum
Manganese
Magnesium
Mosandrium
Mercury

Niobium
Nitrogen
Nickel

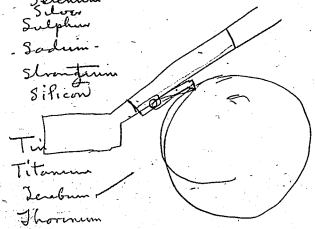
Osmium
Oxygen

Palladium
Platinum
Pelopium
Phosphorus

Rubidium
Ruthenium

Rhodium

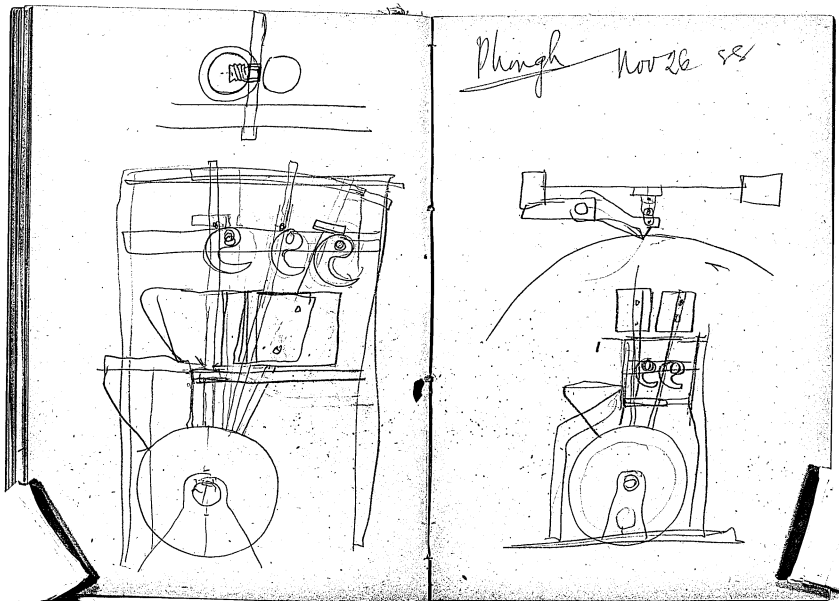
Selenium
Silver
Sulphur
Sodium
Strontium
Silicon

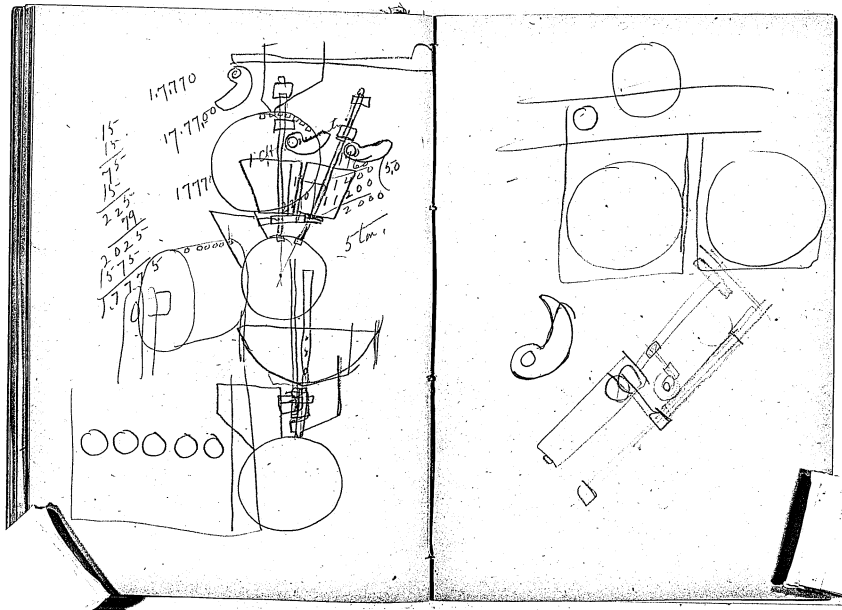


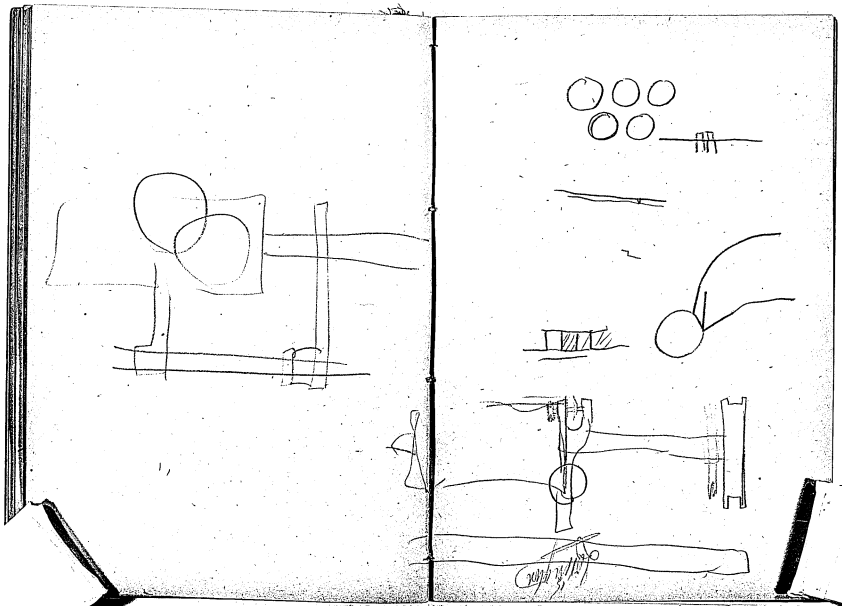
Tin
Titanium
Tecabium
Thorium
Tungsten
Thallium
Tellurium
Uranium
Yttrium

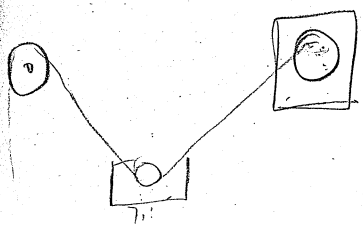
Vanadium

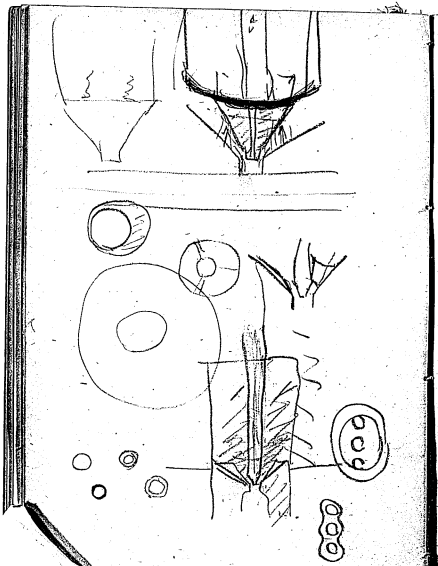
Zinc
Zirconium


Plough Nov 26



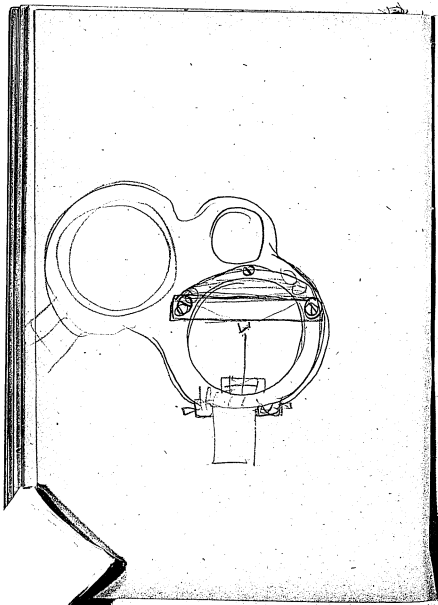


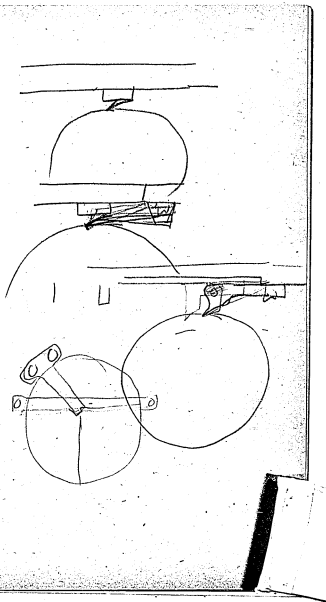


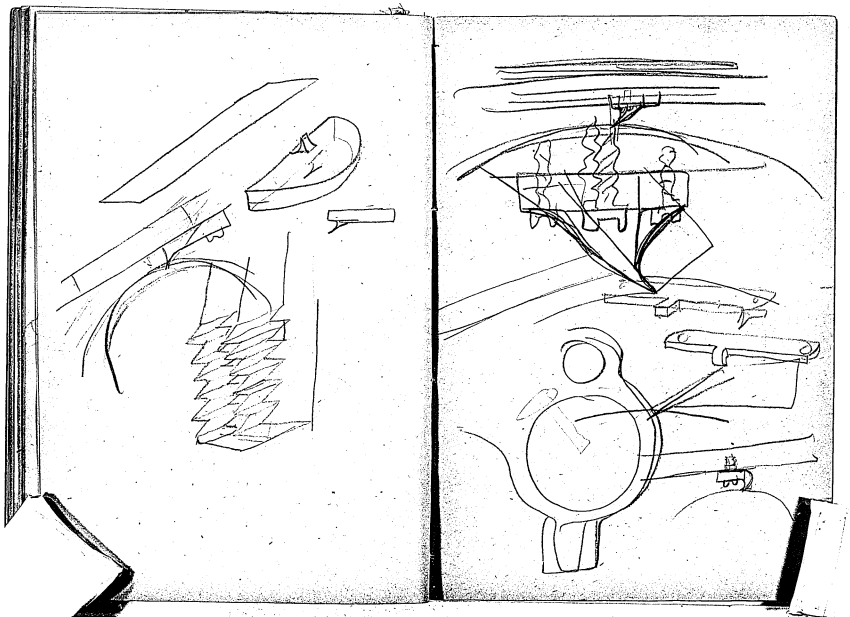


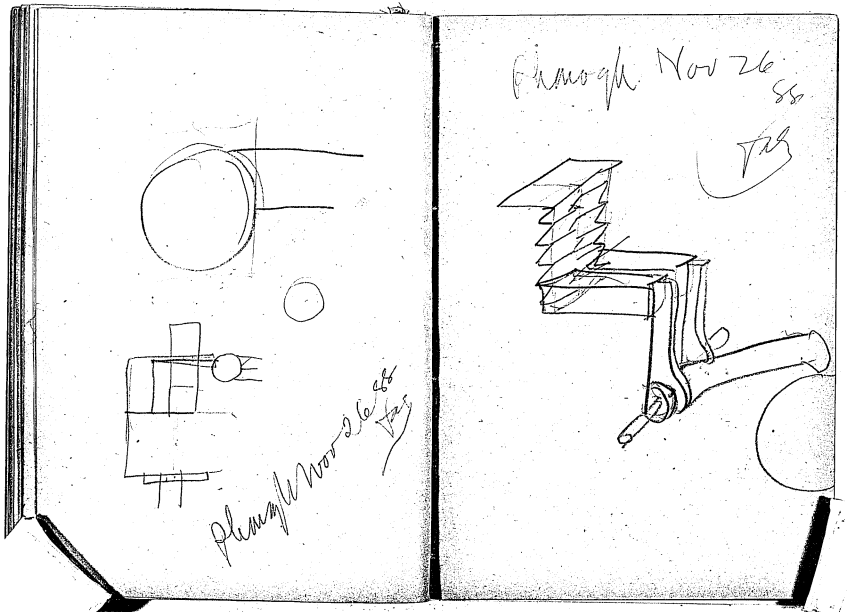
Zinc – Iron Carbon
Strength Iron Carbon
Tungsten, Molybdenum Chromium
arsenic – in acid Salts –

in Caustic, Zinc & Copper Gelatin
Iron Copper in Nickel Iron Silver

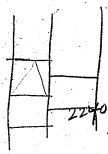




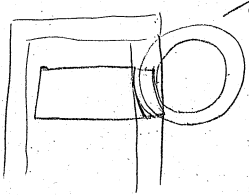



phonograph Nov 26 '88
plunger Nov 26 '88

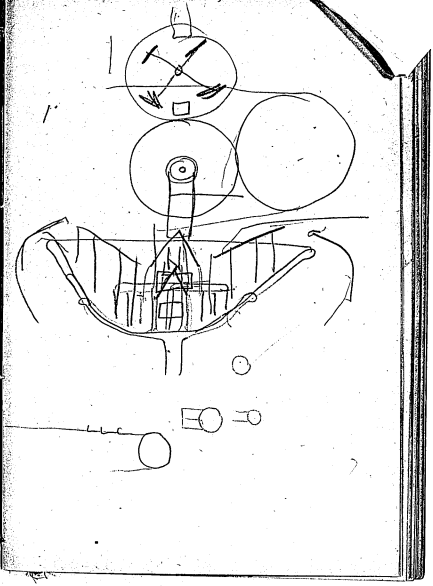
3 24-

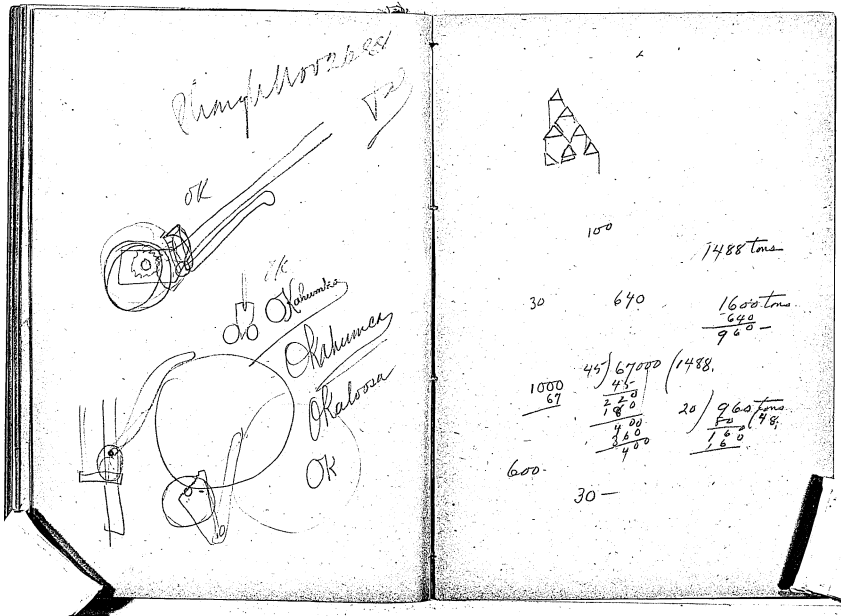


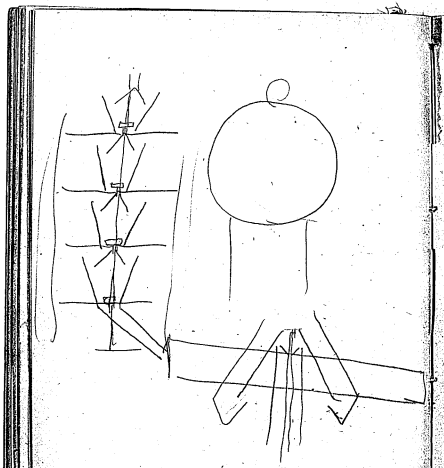
120.
2
240
2200 | 48000 | 21,4
44 1800
3200
2200
1000
96
9



21-tons hour
$4\frac{2}{63}$-




Ringelhornbass
OK
OK
Kalmunzka
Kalmunzka
Kalmunzka
OK
100
1488 tons
30
640
1600 tons
640
960
1000
67
45 67000 1488.
450
220
180
400
360
40
600
30
20 960 tons
40
160
160



6

12-

36
4
144.
6
864.

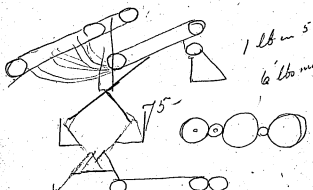
18
8
108.

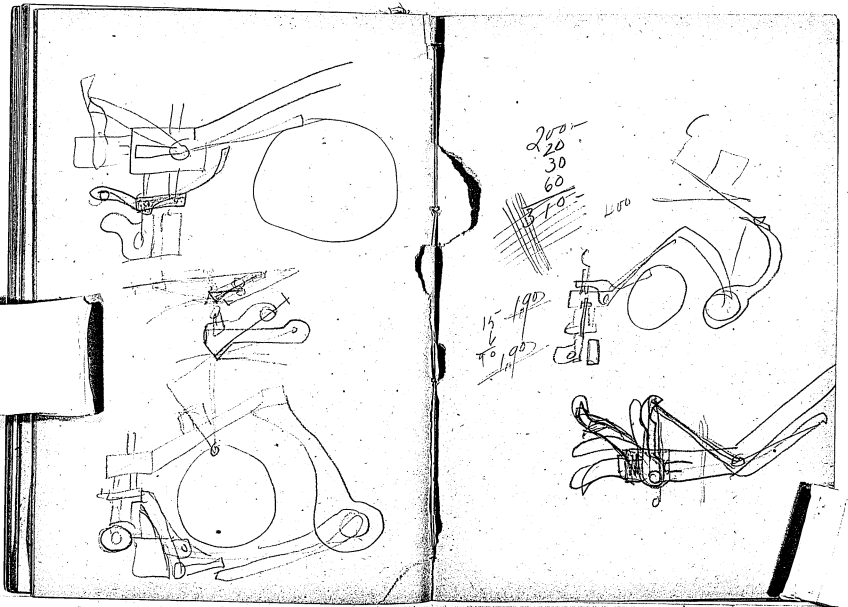
30 turns

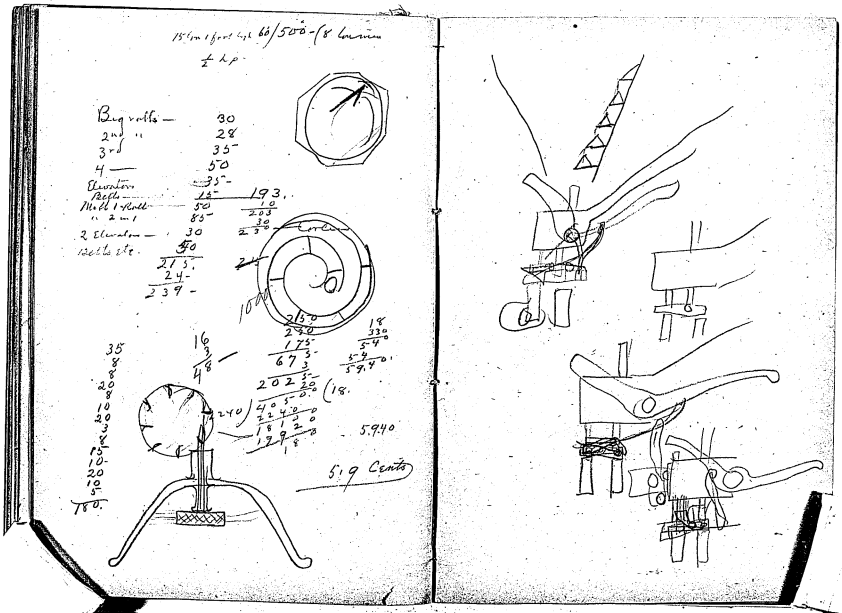
1 lb on 5" arm

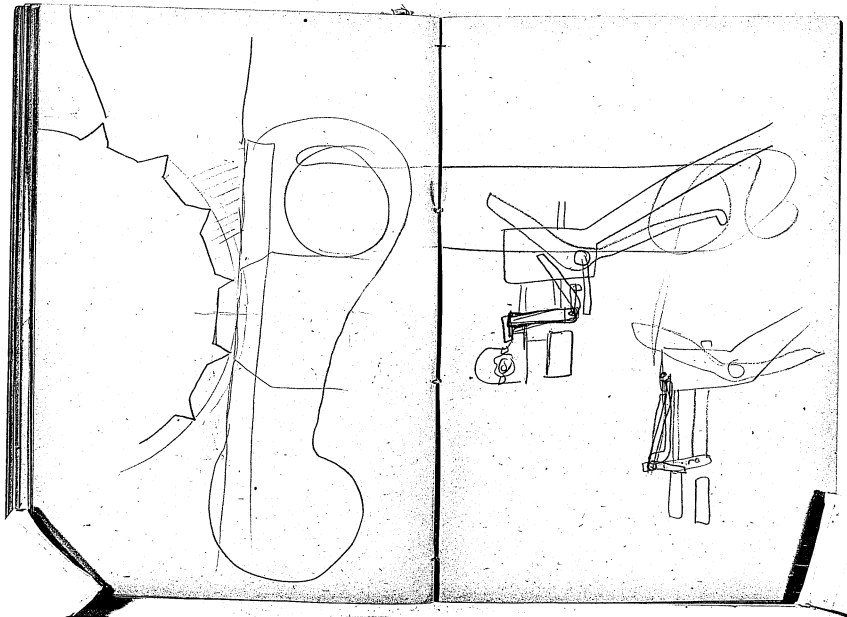
6 lbs mini-

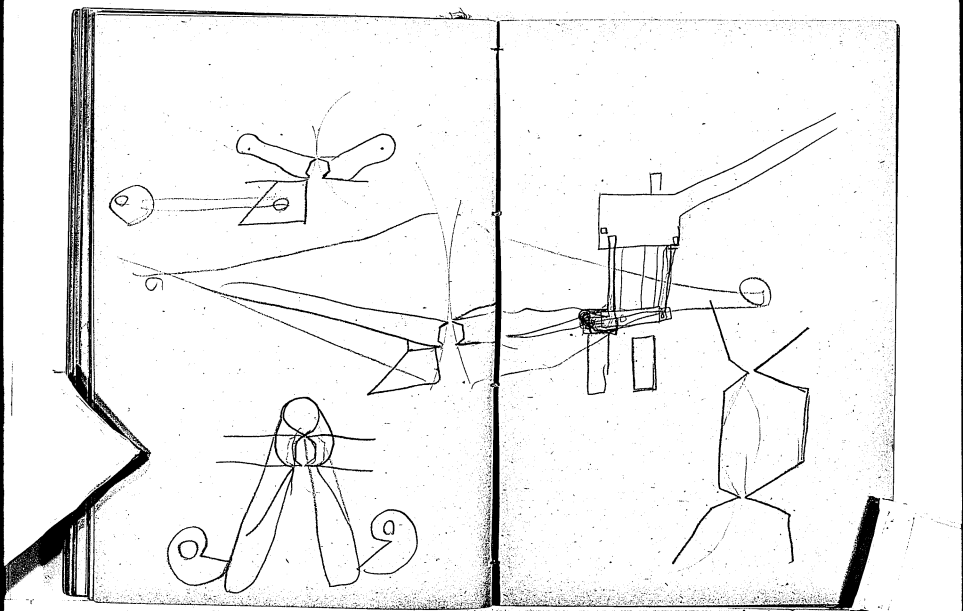
5"

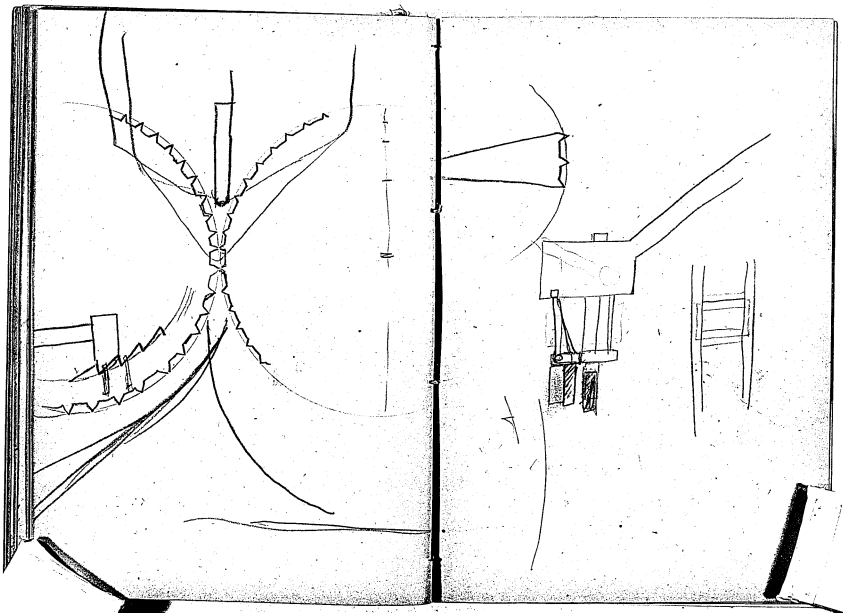


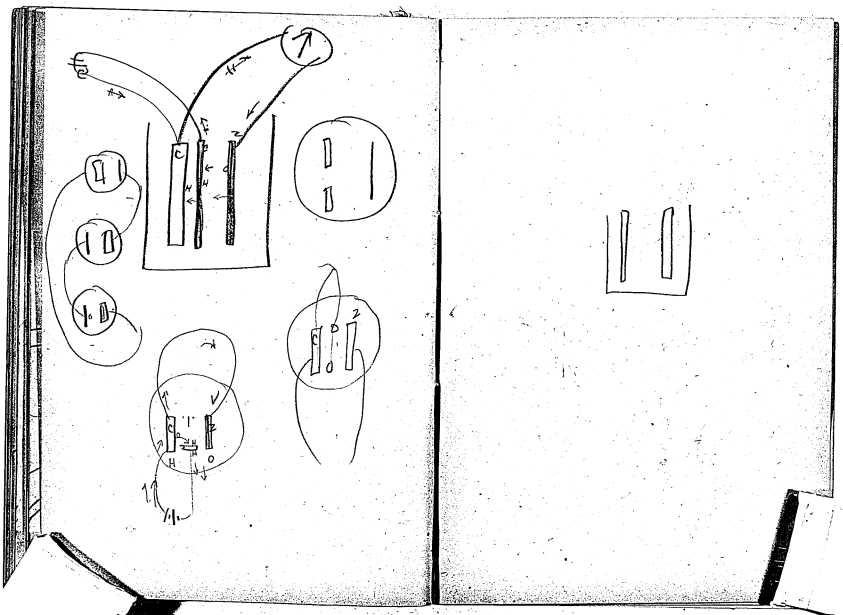

200
20
30
60
10
100
15
190
to
190

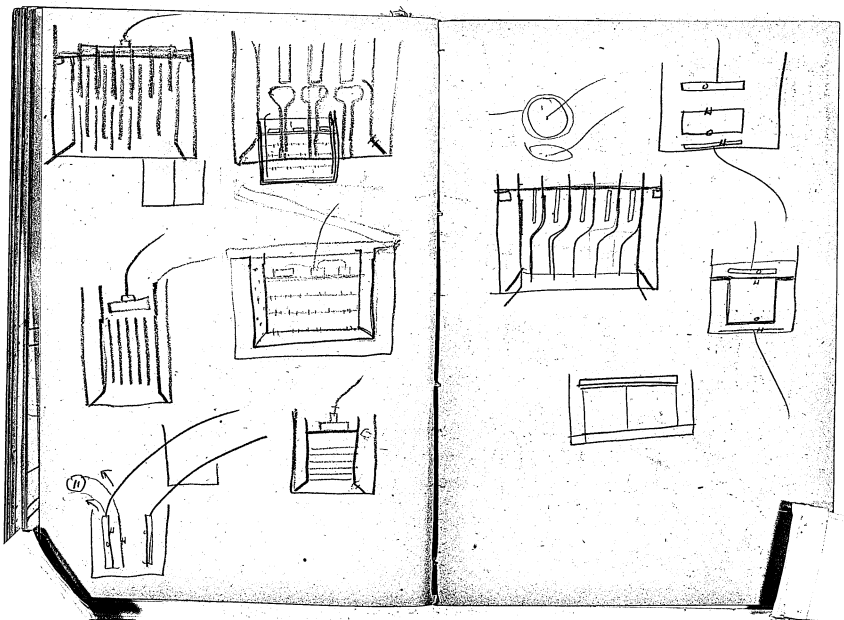

15 Km 1 foot cyl 66/500-18 Louisiana
1 hp
Big wells — 30
2nd " 28
3rd " 35
4 — 50
Elevators — 35
Pools — 15
Mill 1 Well — 50
" 2 in 1 85
2 Elevators — 30
193.
Cords
215.
24
239
16
3/4
4
35
8
8
20
8
10
20
3
15
10
20
10
5
180.
240
5940
519 Cents

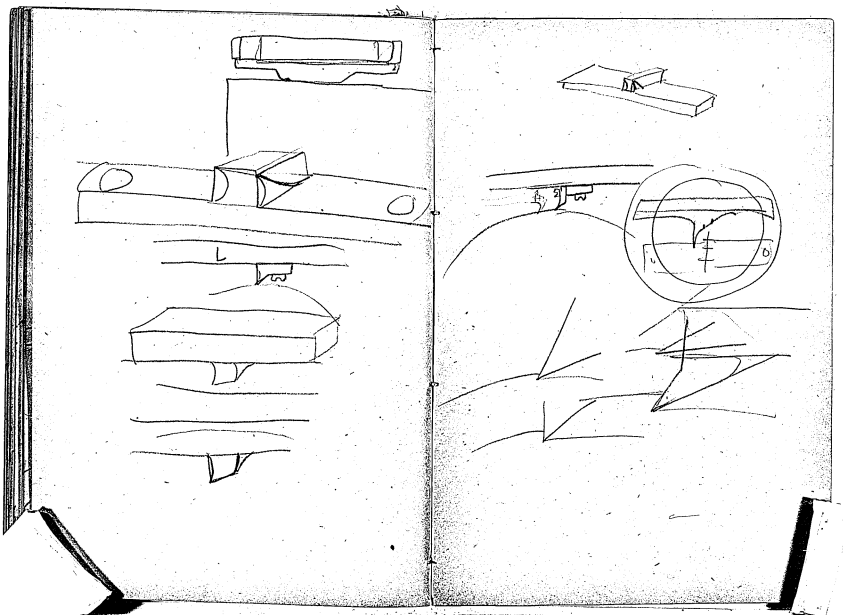


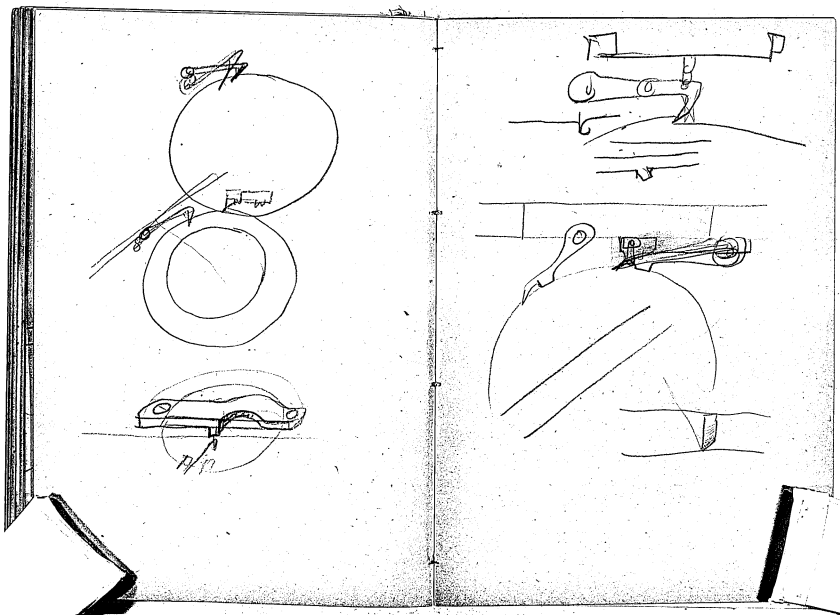


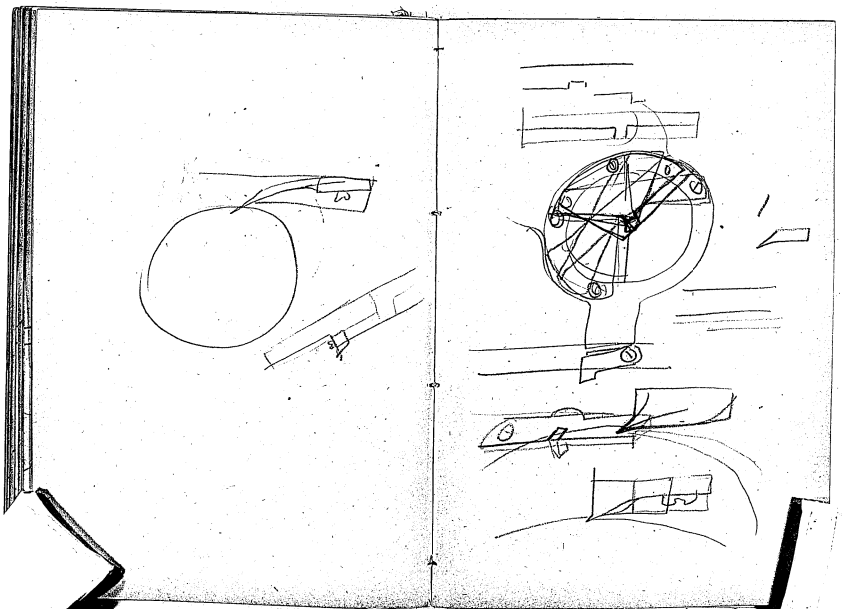


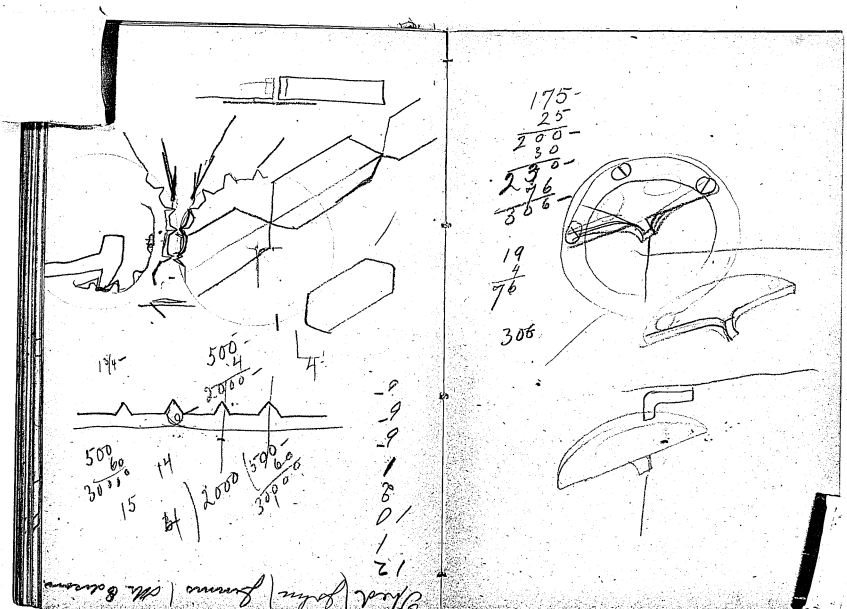


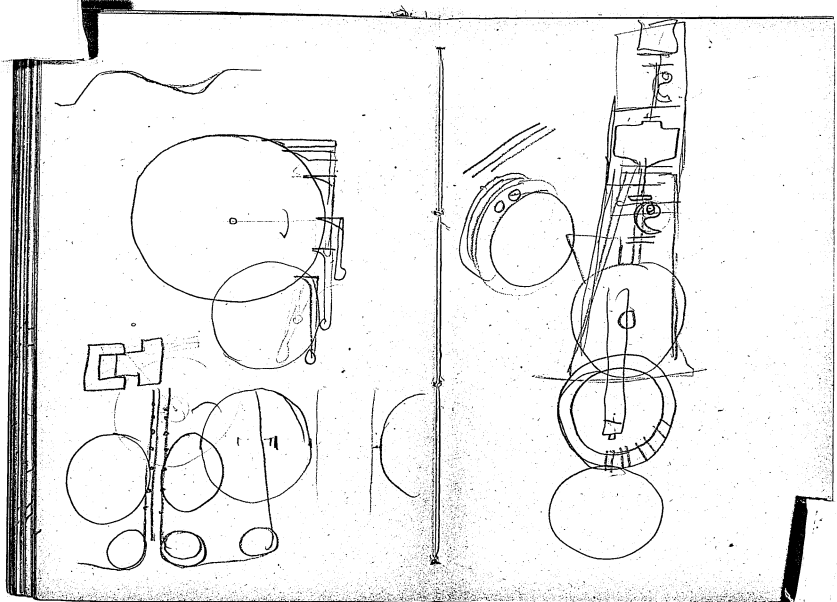


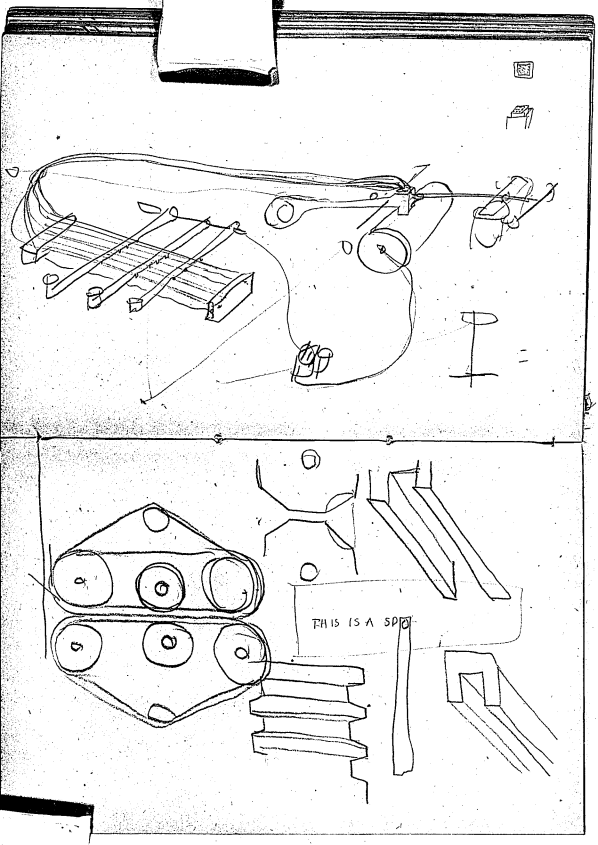


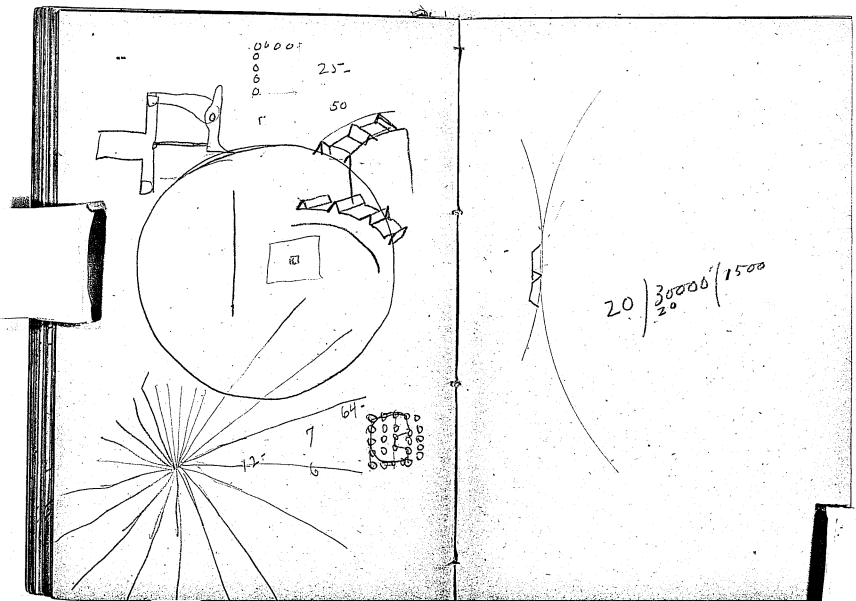


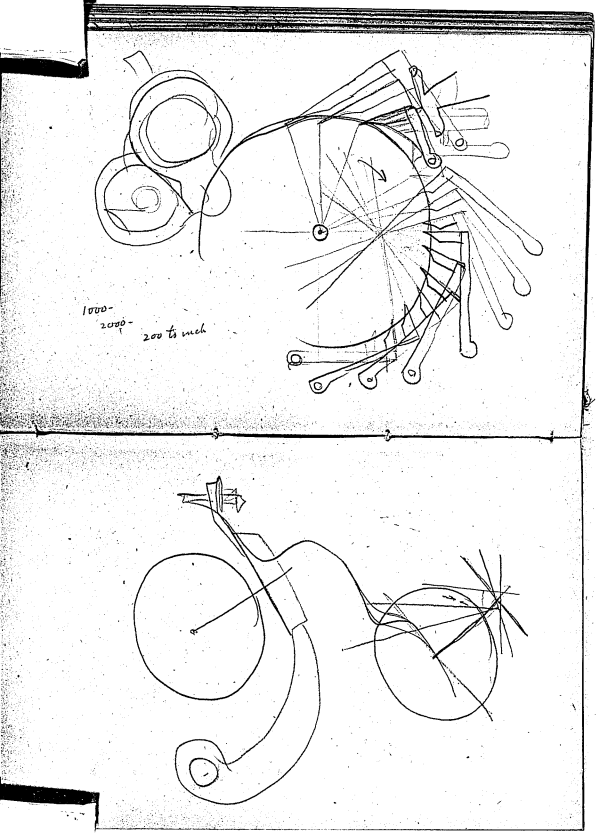


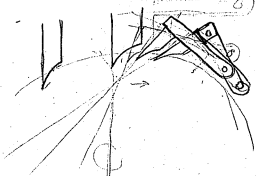

175
25
200
30
230
200
30
19
1/4
76
306
14
500
2000
500
60
30
15
14
2000
1500
60
30
12
1
10
9
8
9
9
9

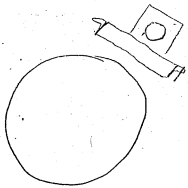



THIS IS A SPOT


25
50
64
12
7
6
20 | 30000 | 1500
20


1000-
2000-
200 to inch





60 1600 ft

10000 - 1/1000 long

1/100 - 2/10000

in with pieces

2510 ends
2510
5020.

5000 - 2/1000 50
2500 4
1250 8
625 16
312 32
156 64
78 128

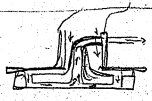
1

stretched membrane diaphragm
behind glass to away slope
air + with + diminish front
part air waves

2 =

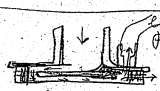
3 a spring very powerful outward pull to diminish the lit part of sound wave + increase amplitude of reflection due to elasticity

4



No air pressure merely a passing Condensation

5



Passing Condensation

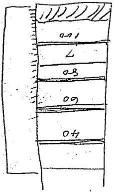
glass trapezium amply by sleeve tube

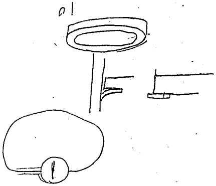
Scraping Screw

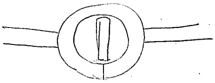
- Screen or Non electrical Cylinder equivalent

**Notebook, N-88-10-01**

This notebook covers the period October 1888-January 1889. It was used by Edison for drawings relating to dynamos, electric power distribution, and lamp vacuum experiments. Also included are notes and drawings pertaining to phonograph, typewriter, and ore milling caveats. At the end of the book is a table of chemicals and suppliers and a series of calculations. Inserted into the book is a 2-page note from Edison to experimenter James W. Gladstone regarding phonograph cylinders. The pages are unnumbered. Approximately 70 pages have been used.

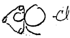


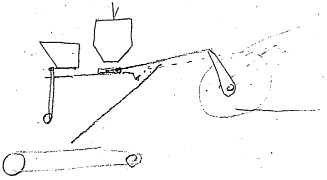


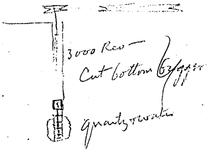


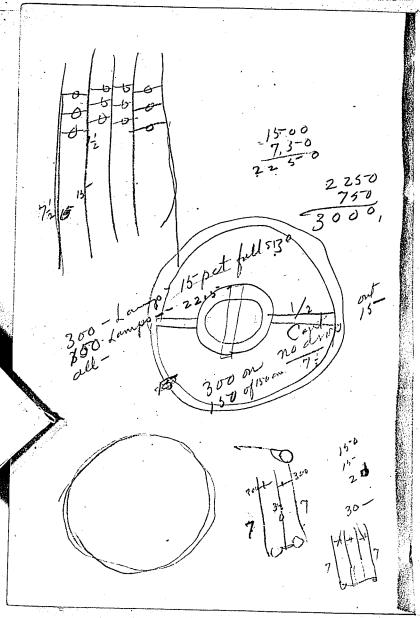
No1

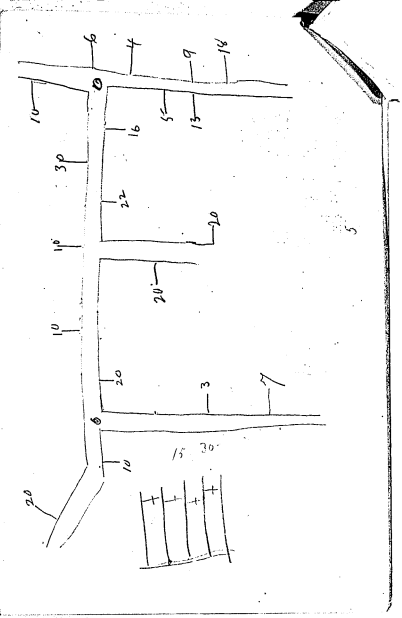
Stamp mill principle

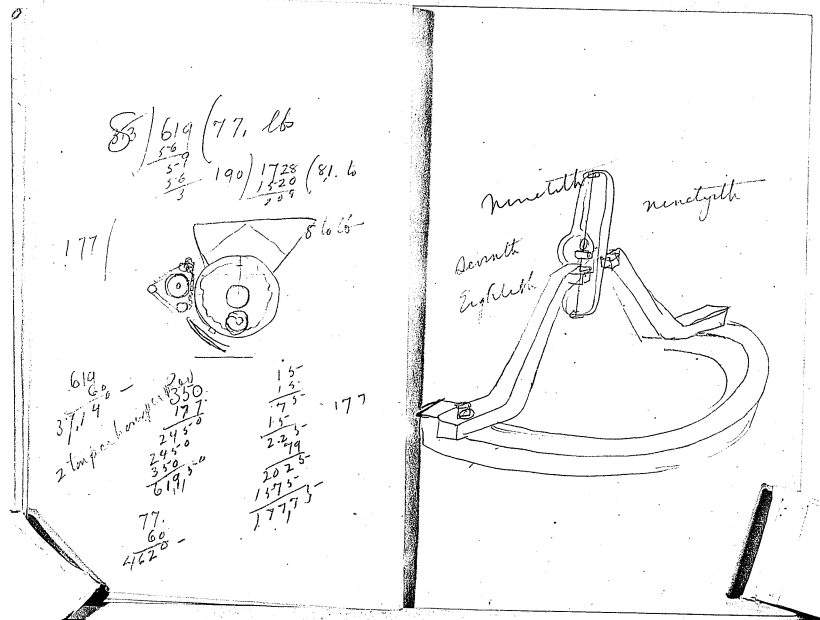
No2  Chain principle

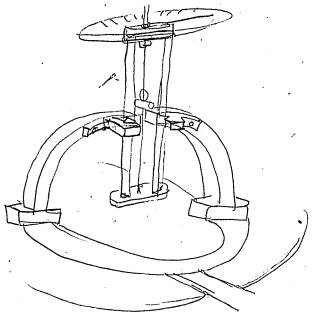


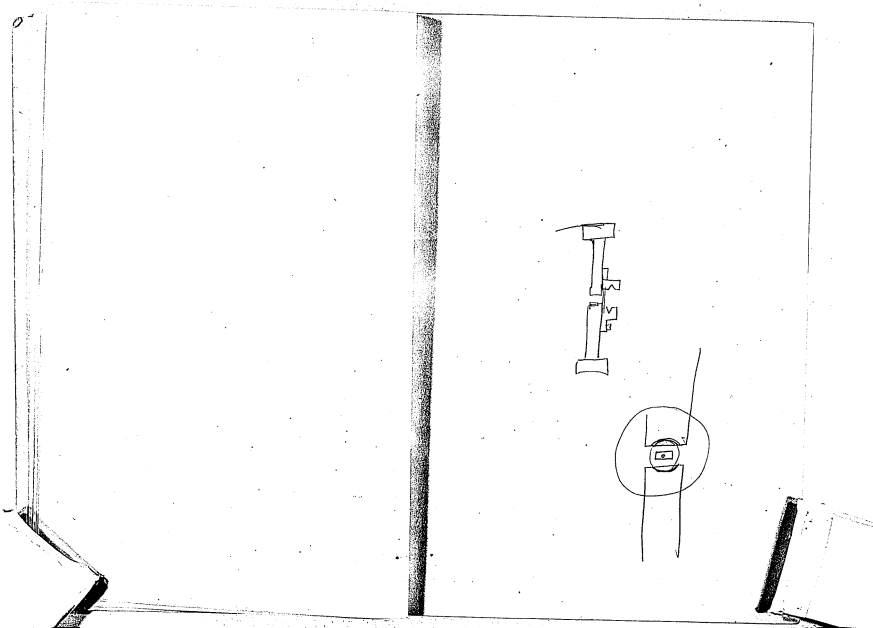


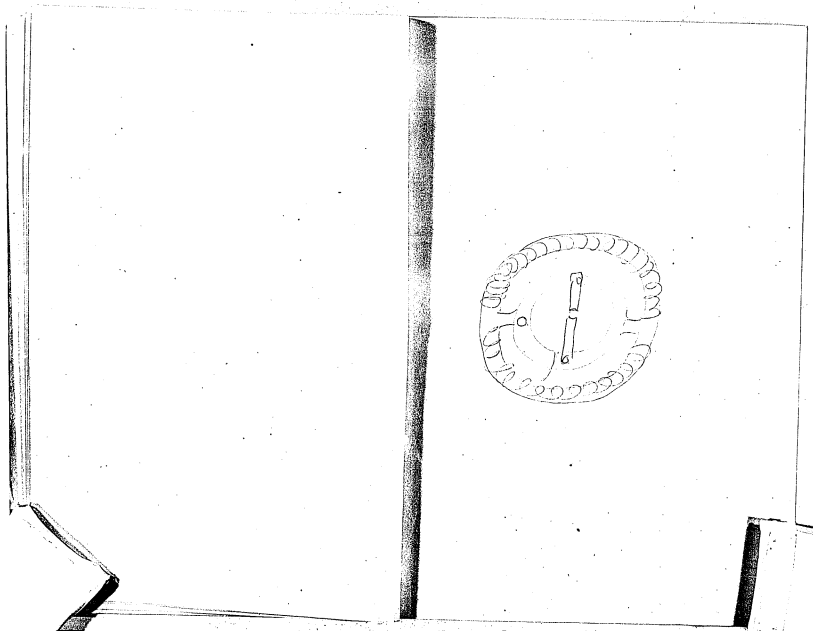

15-00
7 3-0
22 5-0
2250
750
3000,
300 - Lamps @ 15 pct full 513
300 - Lamps @ 22½
all -
1/3
300 on 150 of 150 on 7½
15-0
15
2
30
7

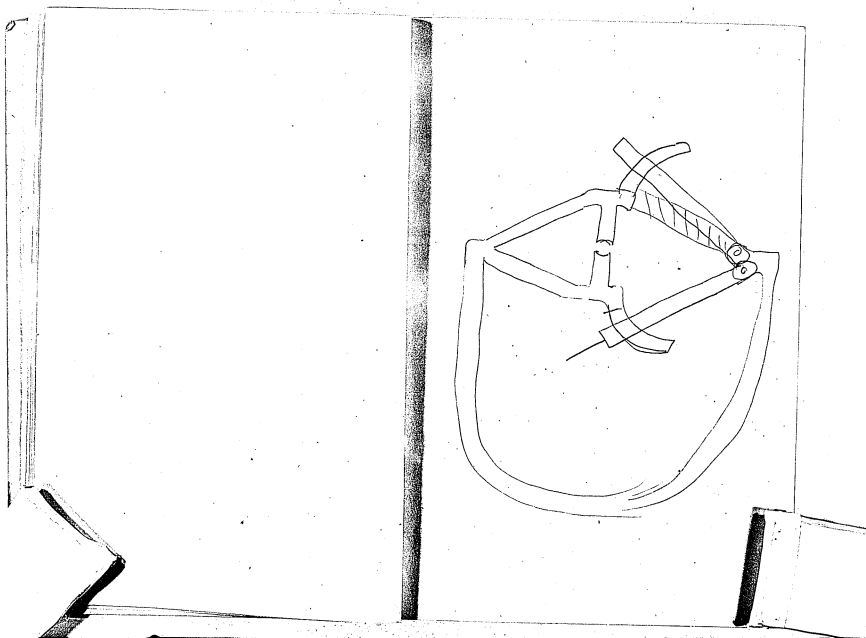

6
4
9
14
10
16
5
13
30
22
10
5
10
20
10
20
3
7
6
10
15
30
20

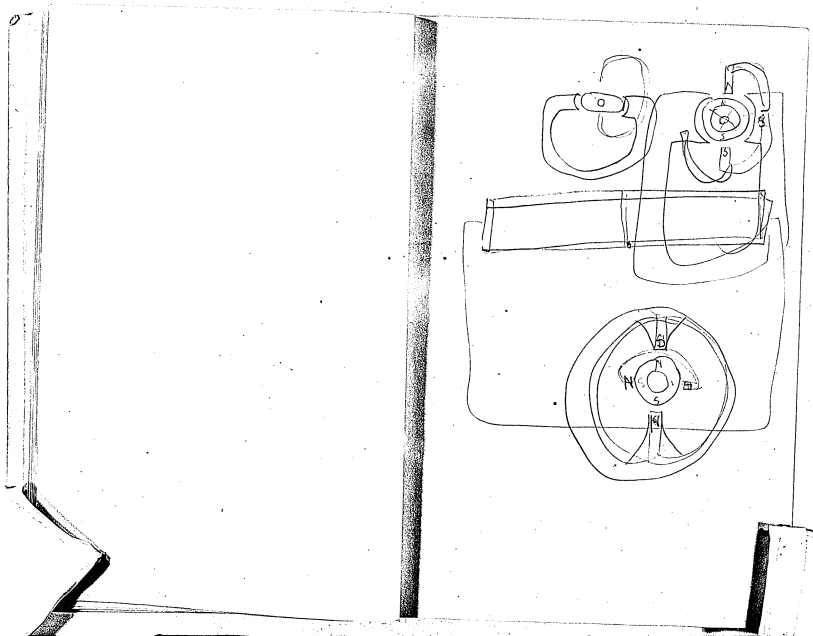

ninetieth
ninetyth
Seventh
Eighth

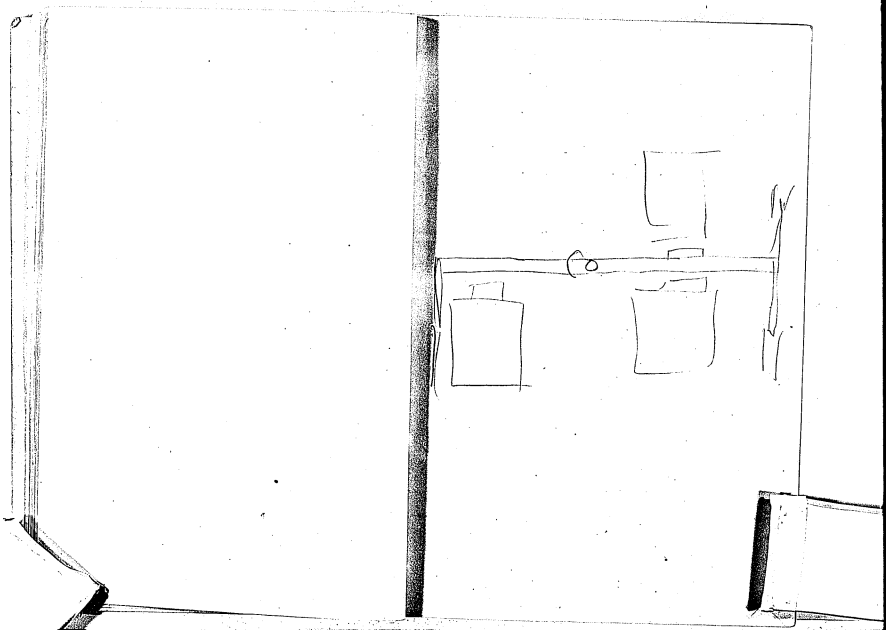


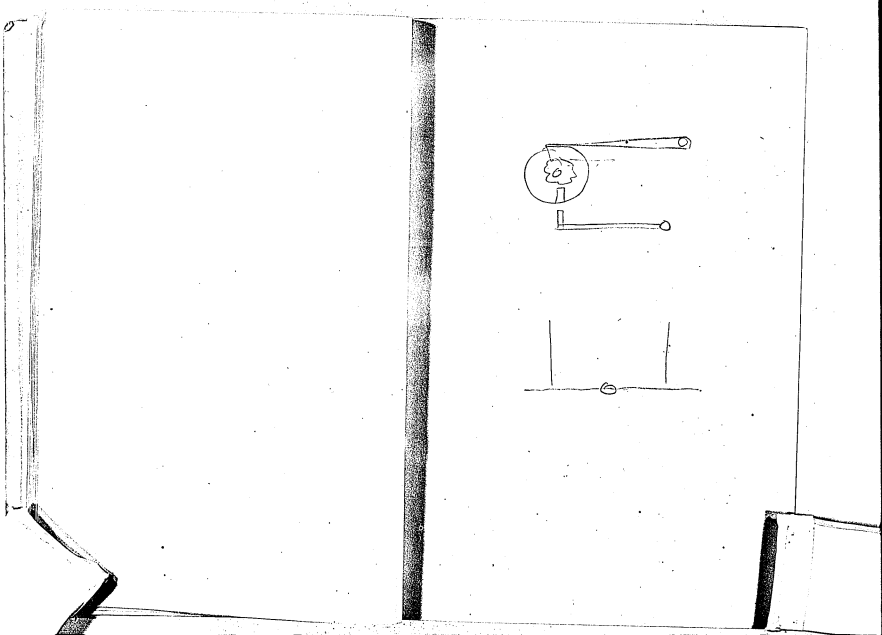


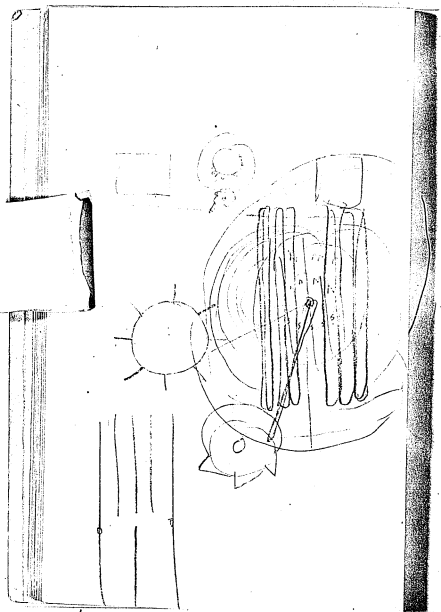


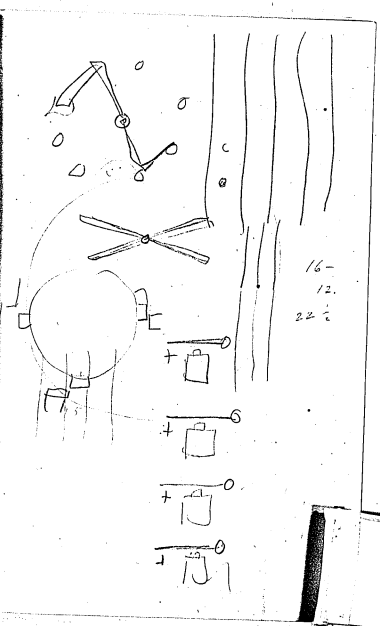


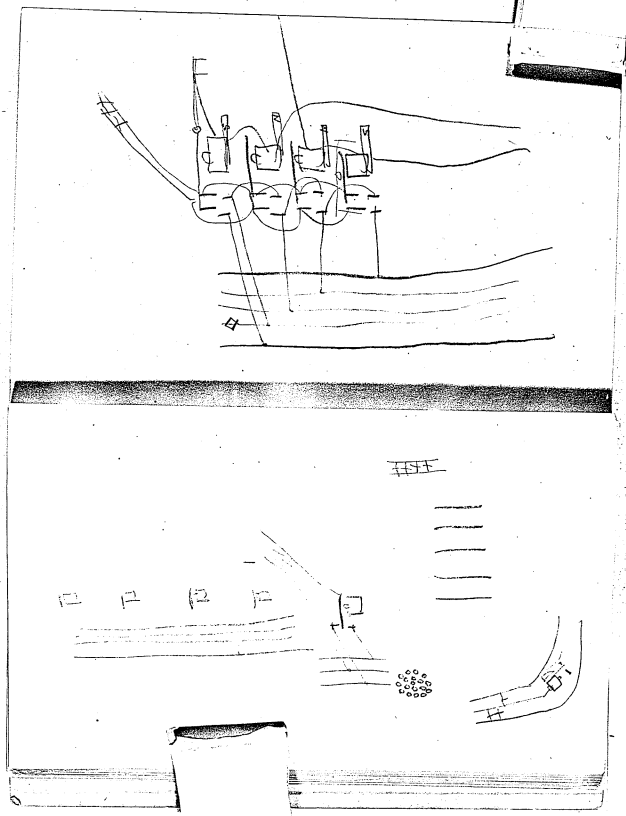


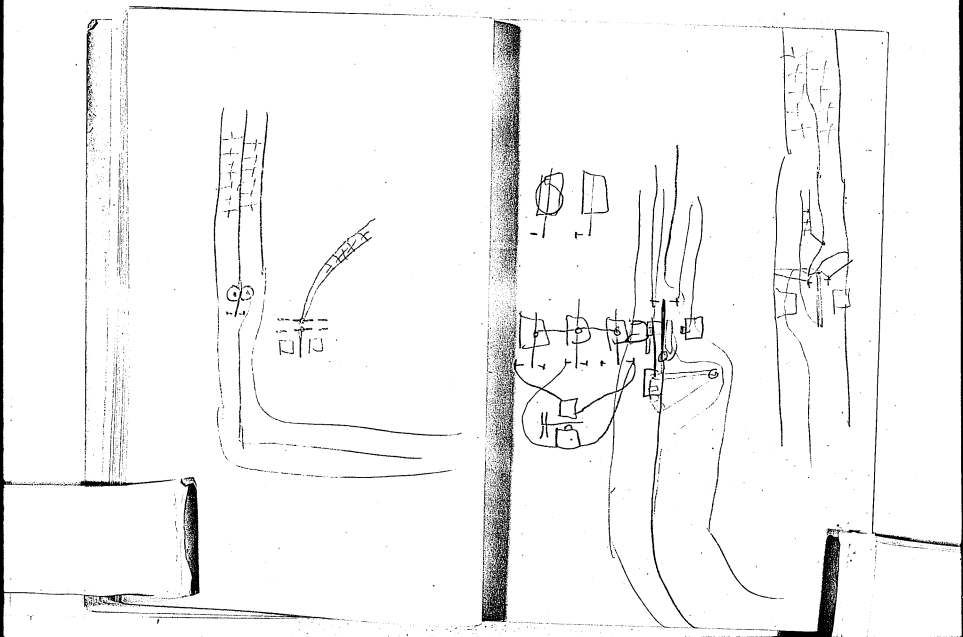


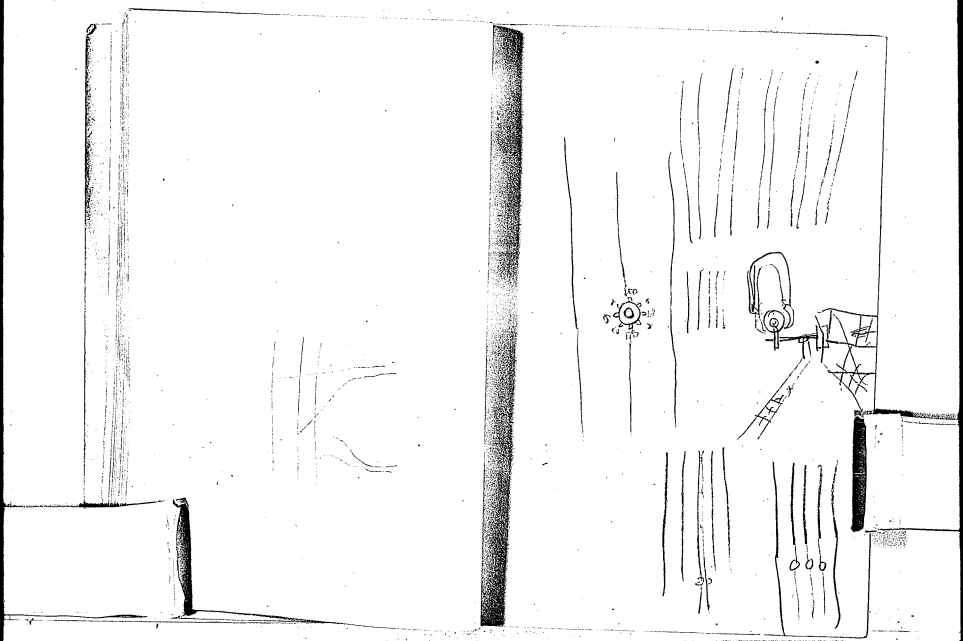


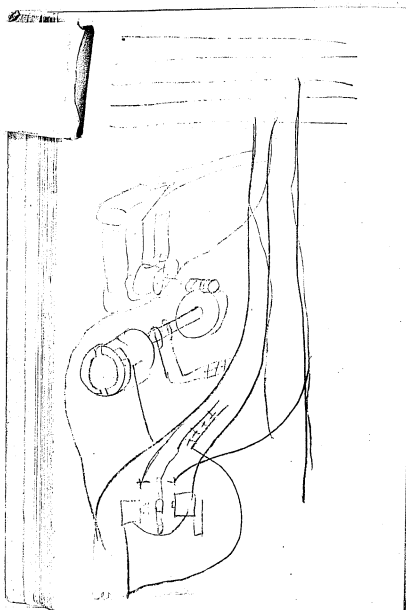


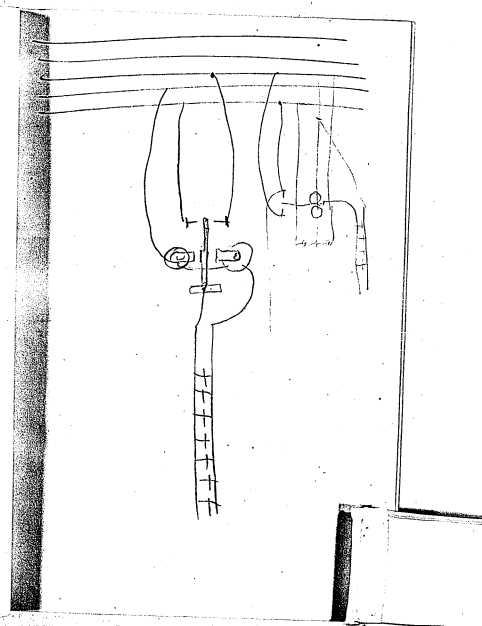

16-
12.
22 1/2

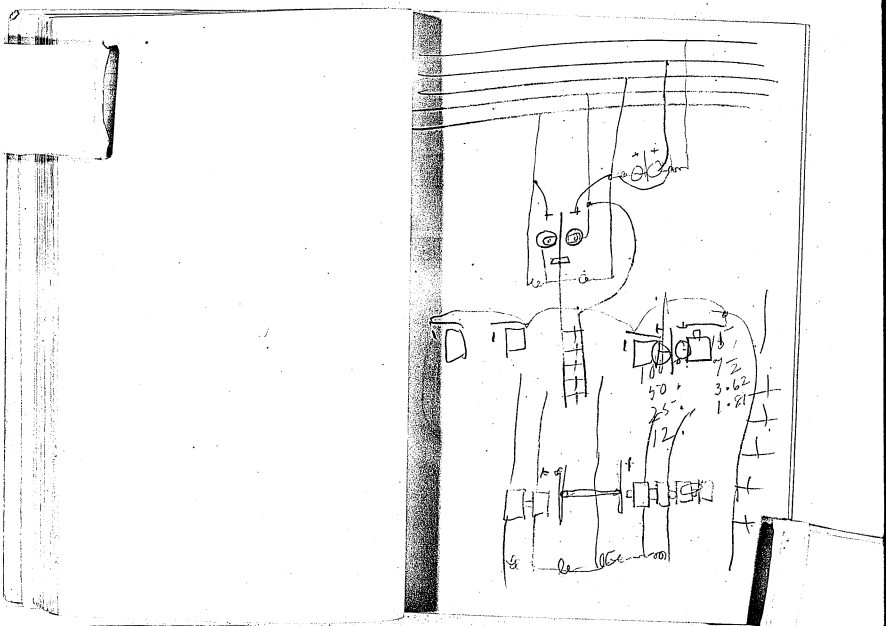


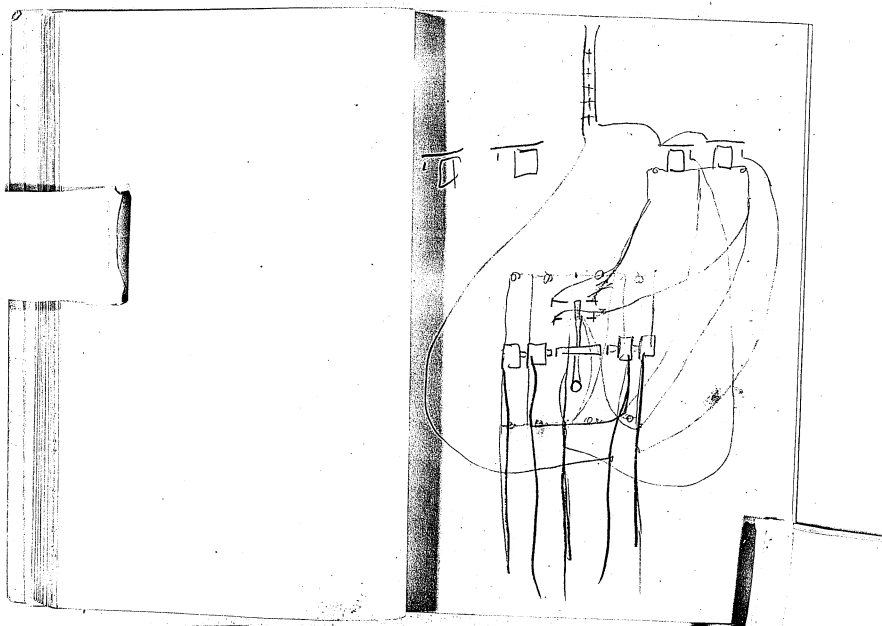


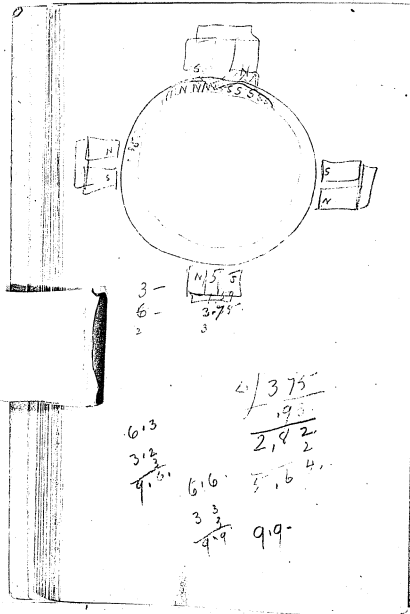











S
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6.6.
5.6
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3 3
9.9
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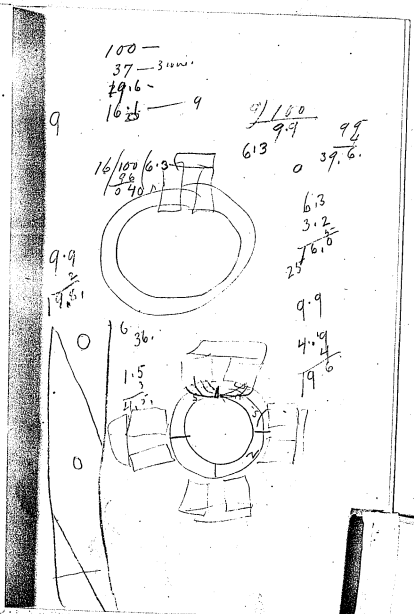
100 —
37 — 3 min.
9.6
16 — 9
9) 100
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99
6.3
0
39.6.
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96
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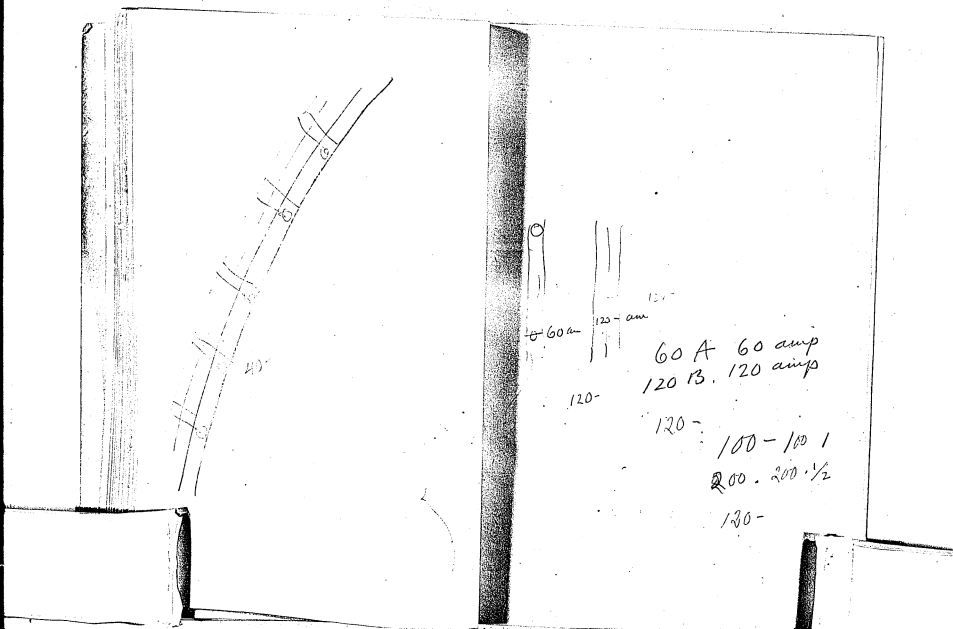
2


60 A 60 amp
120 B. 120 amps
120-
120-
100-100 1
200. 200. 1/2
120-

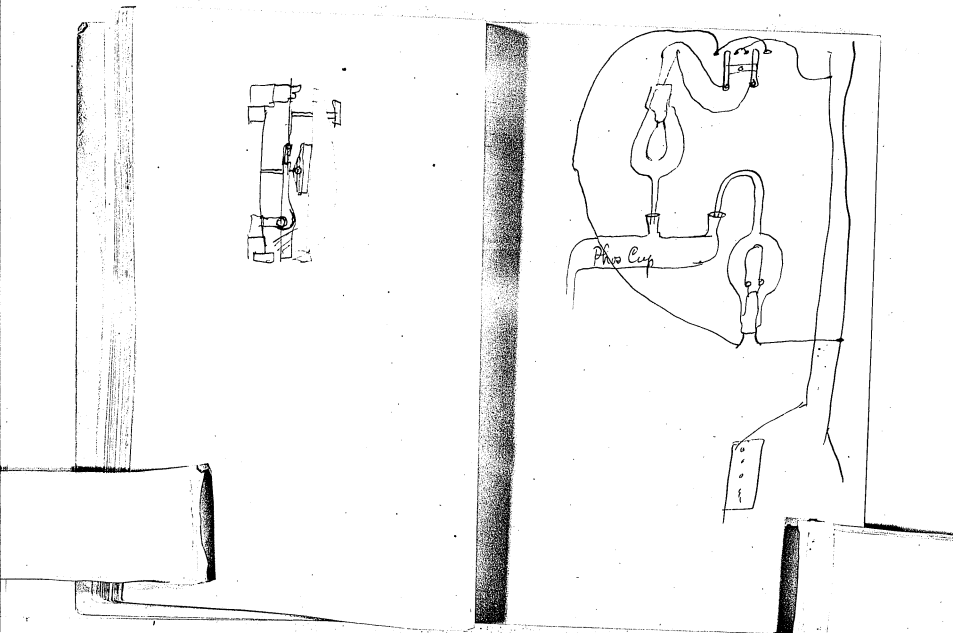
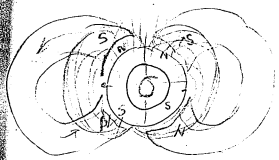
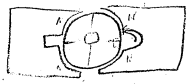
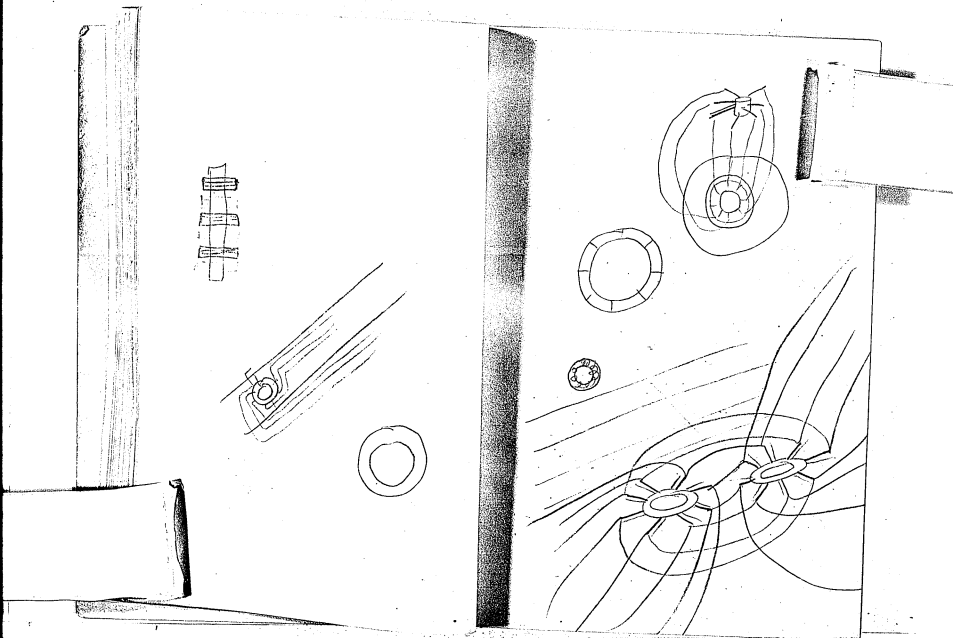
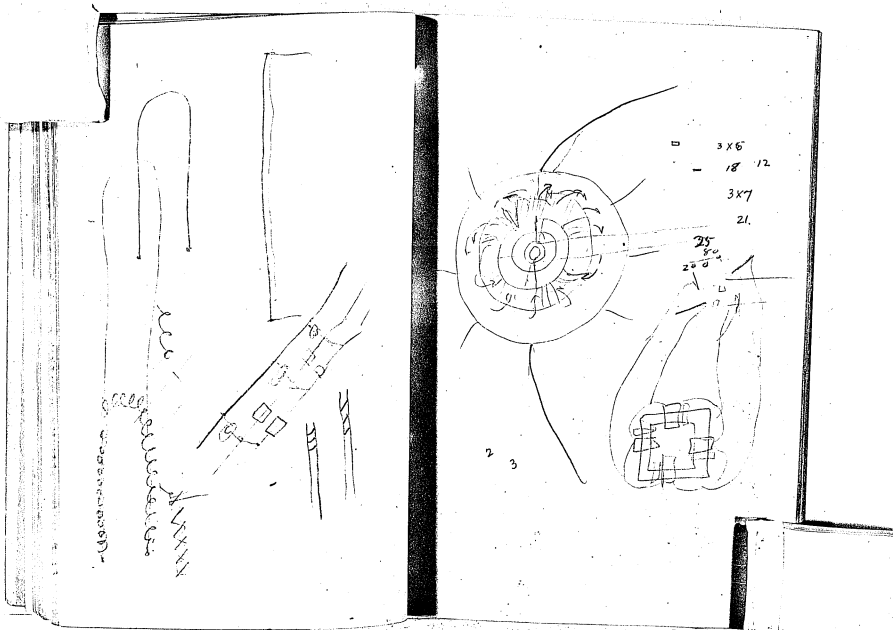


Photo Cup








3 X 6
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25
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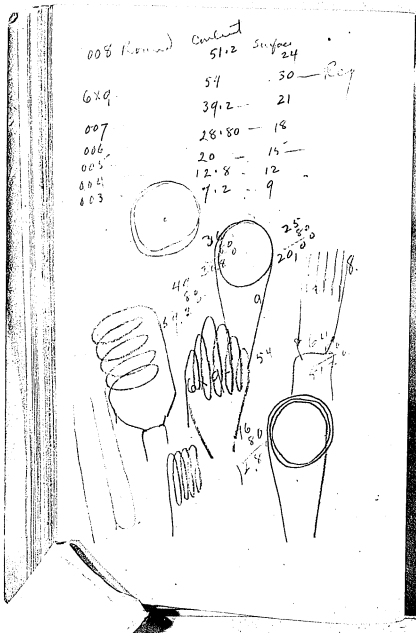
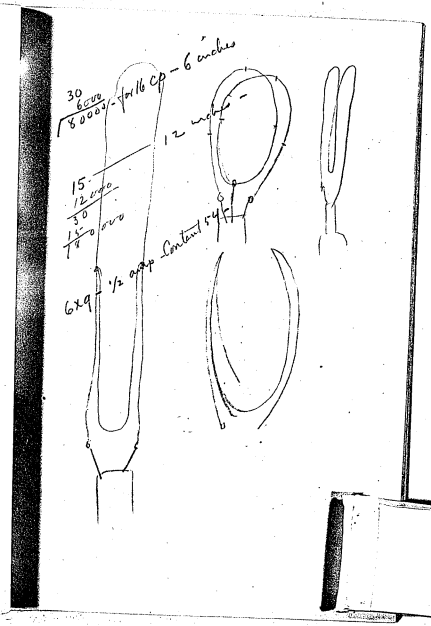
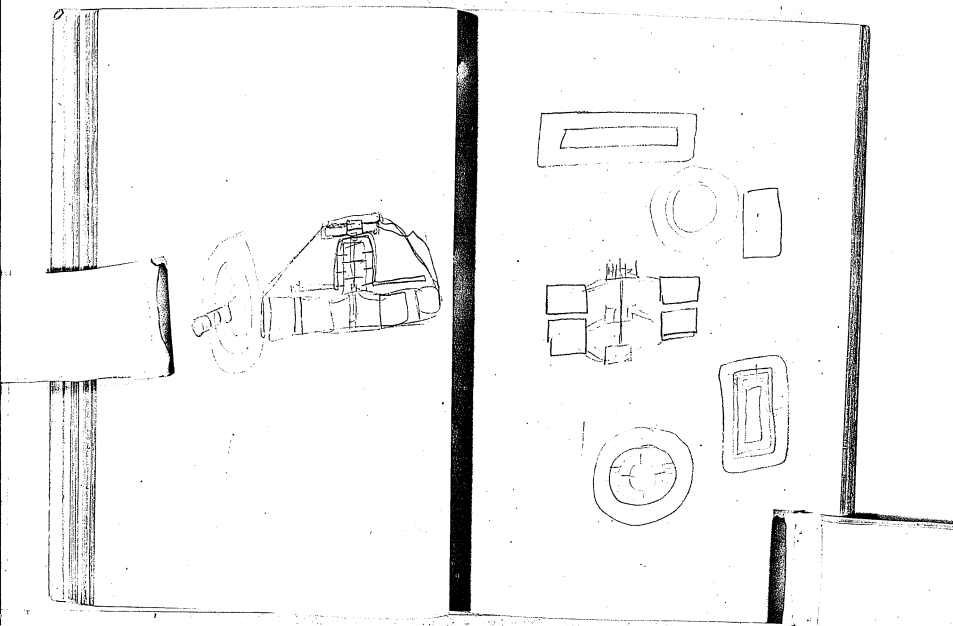
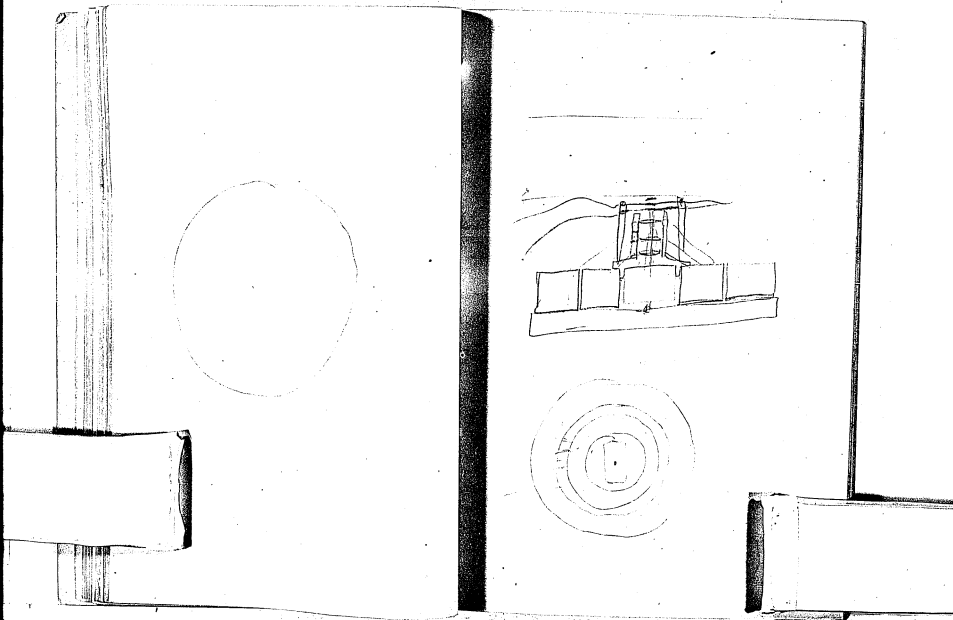
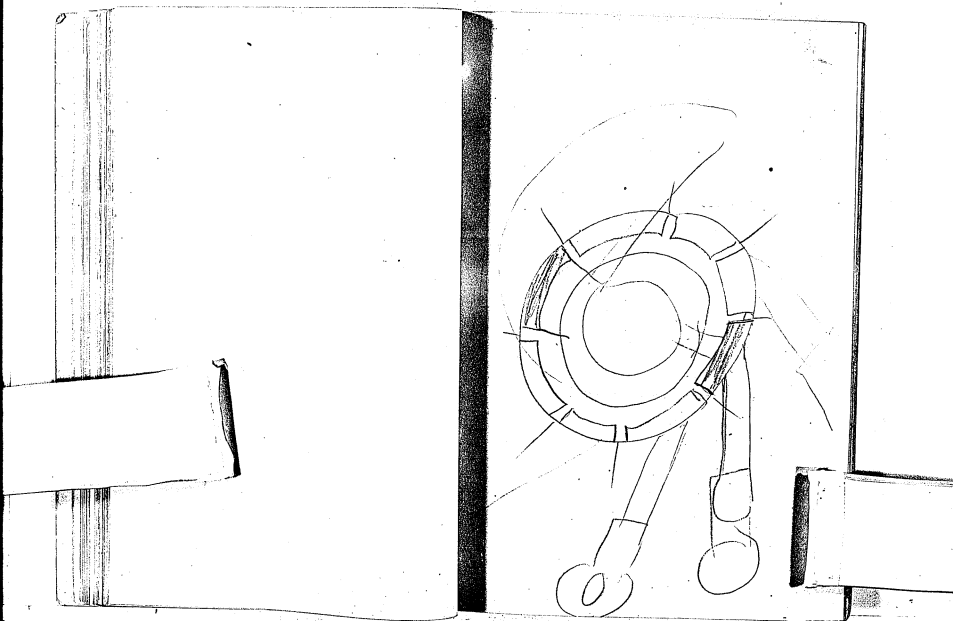
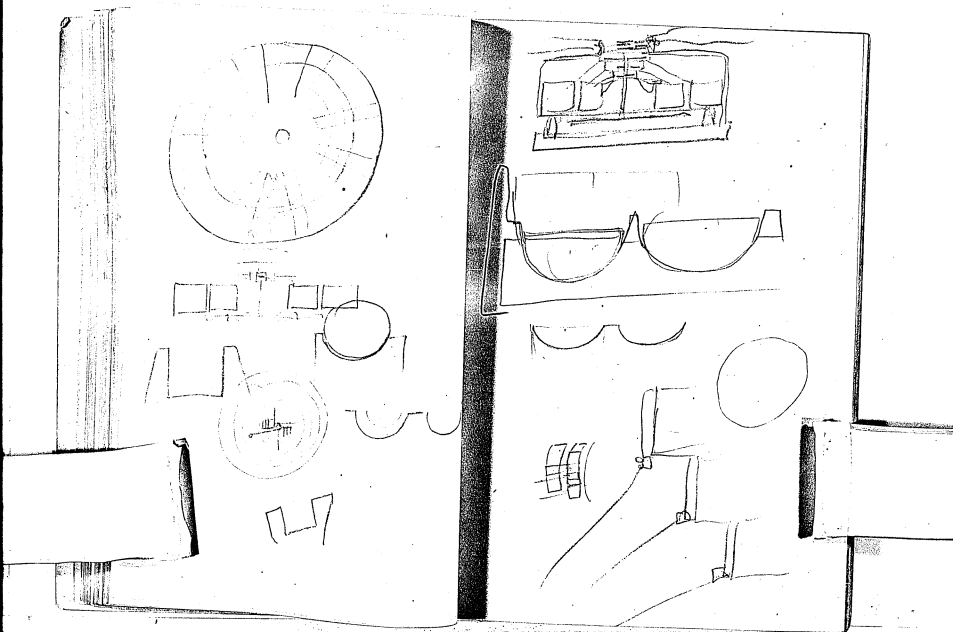

005 Round
Content
Surface
51.2
24
54
50 — Rep
6×9
39.2
21
007
28.80
18
006
20
15
005
12.8
12
004
7.2
9
003

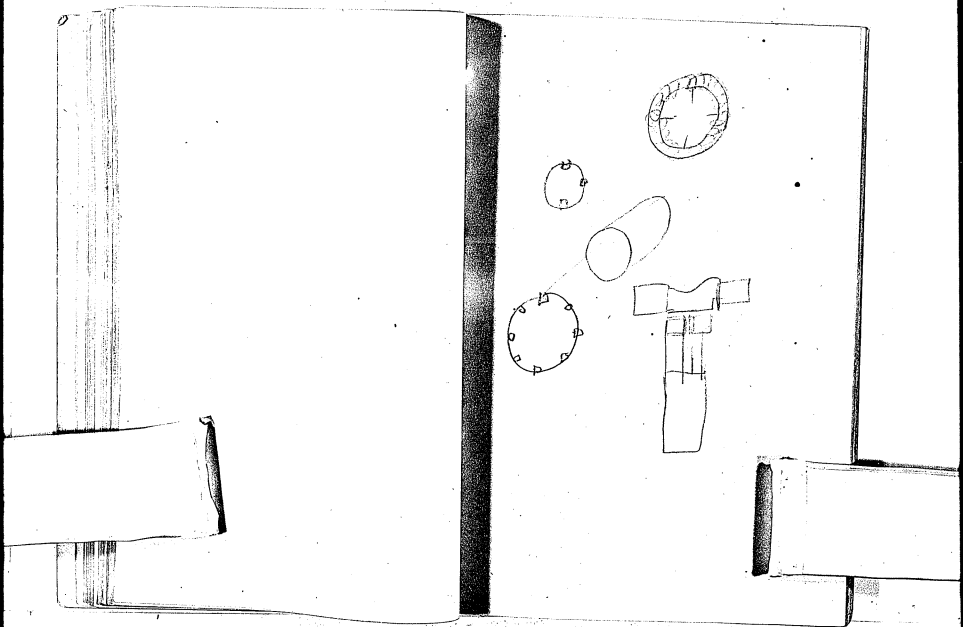

30
6cup
8000 - for 16 cp - 6 inches
12 inches
15
12 cup
3.0
1.5.0 sup
6×9
1/2 cup Content 54

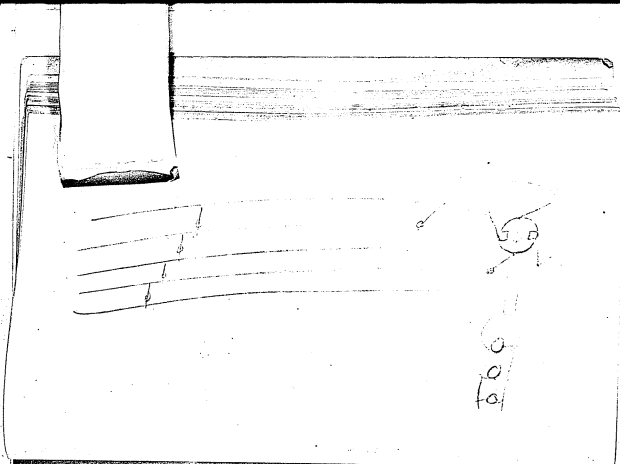


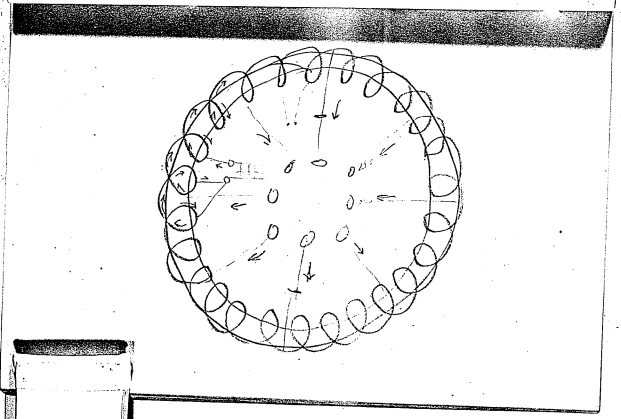


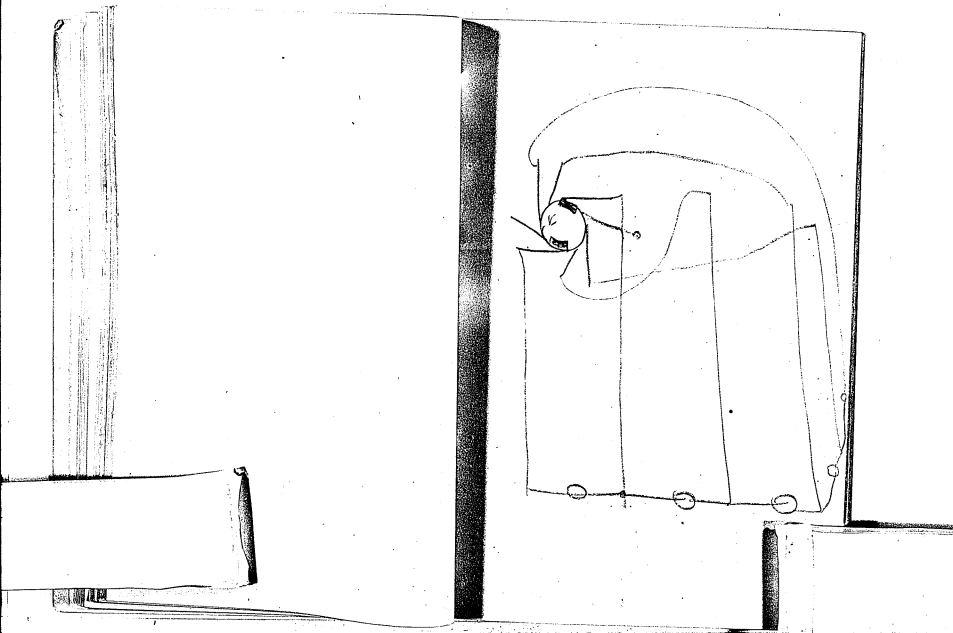


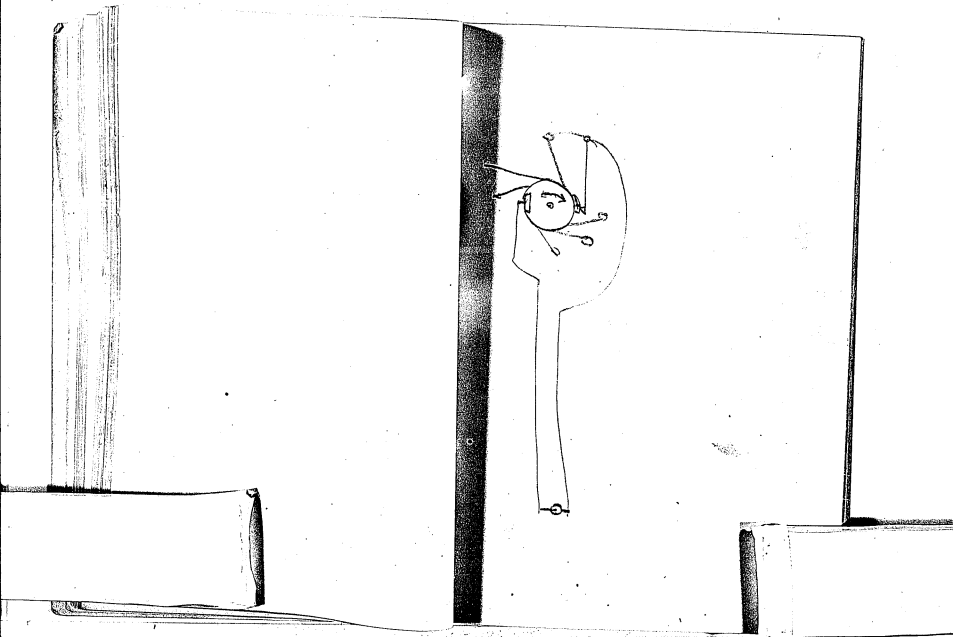


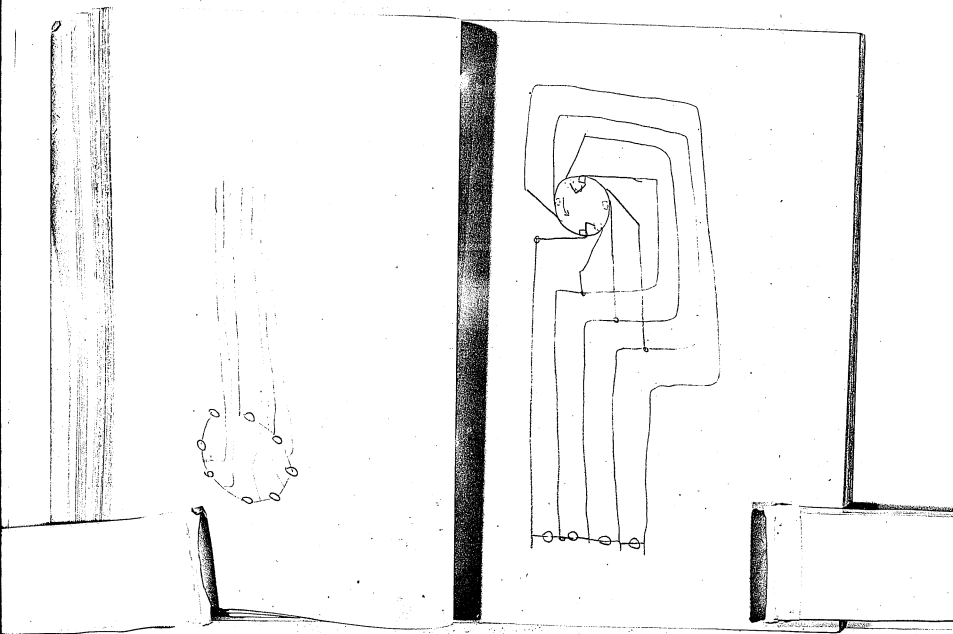



fa









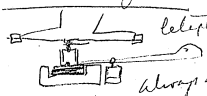
2nd Large phonograph Cylinder

Oct 7 1888

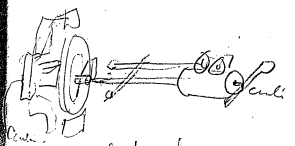
TAE

wound with thread turns
wire - flat or round
Cloth in strip + then
put on Mould & Cylinder
poured -

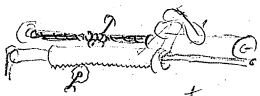
A Recording Cylinder Composed
of several hard materials
so Whole will be amorphous
although the several ingredients
may each be crystalline



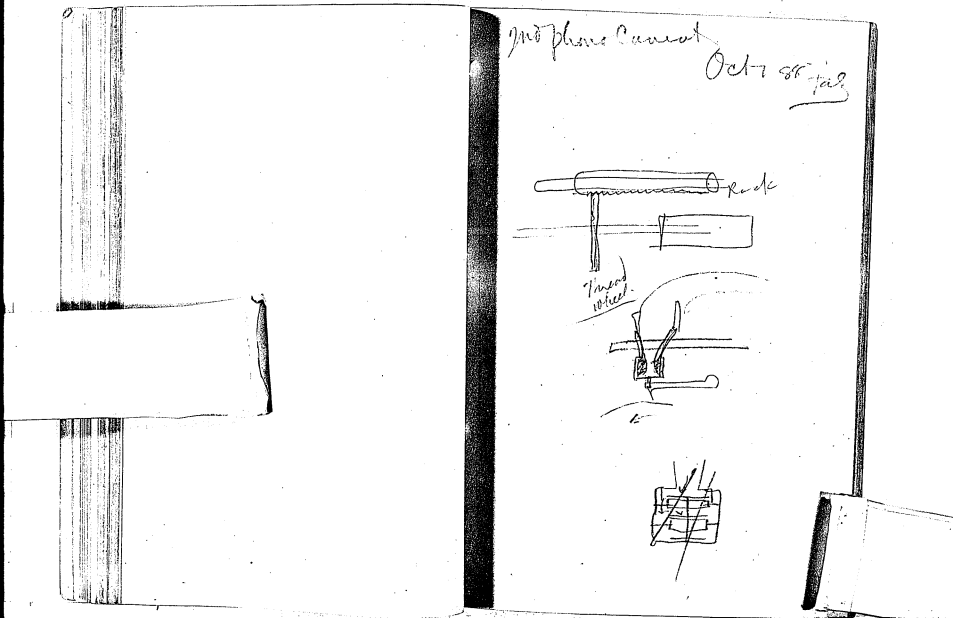
Pat Pharm Council
Oct 1 1885 JAE



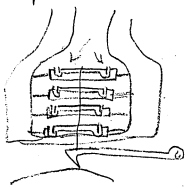
Modified — also gramme principle

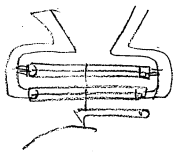


new Motion

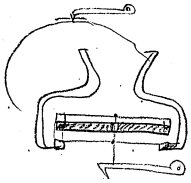

Rack
Wood wheel

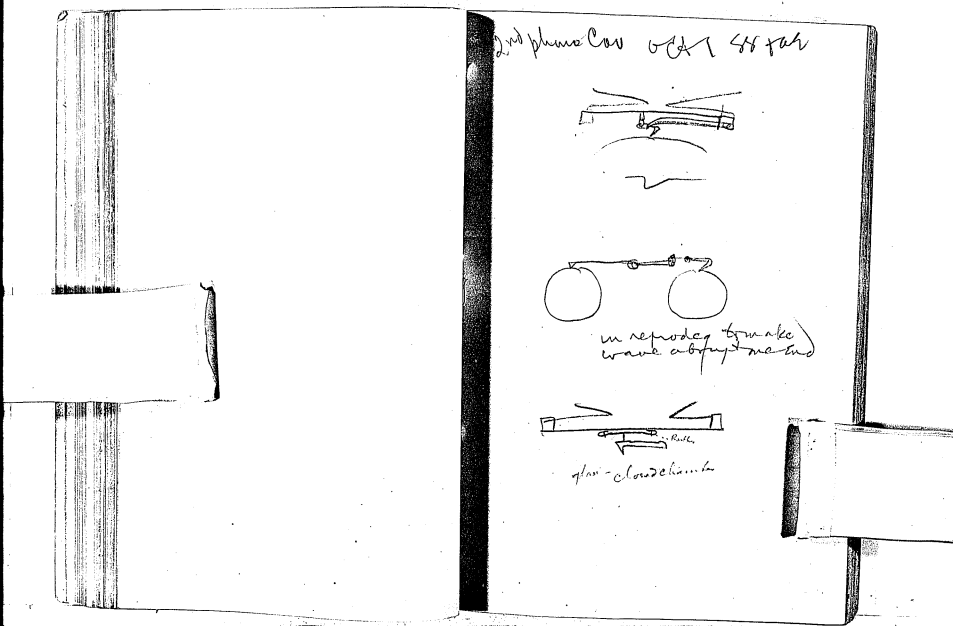
2nd phono Caveat Case 1 88



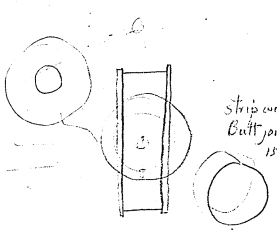


Double disc



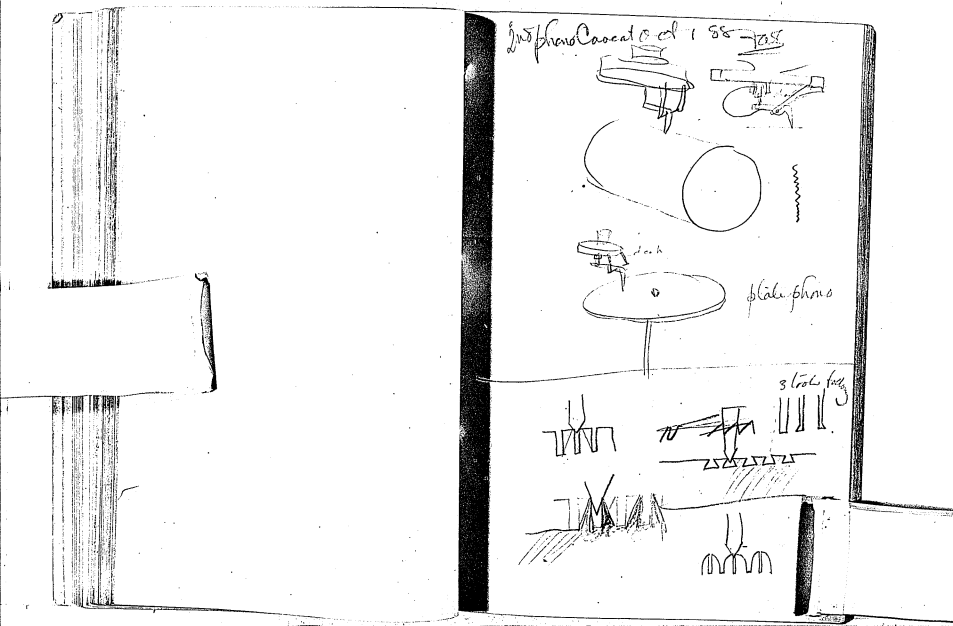


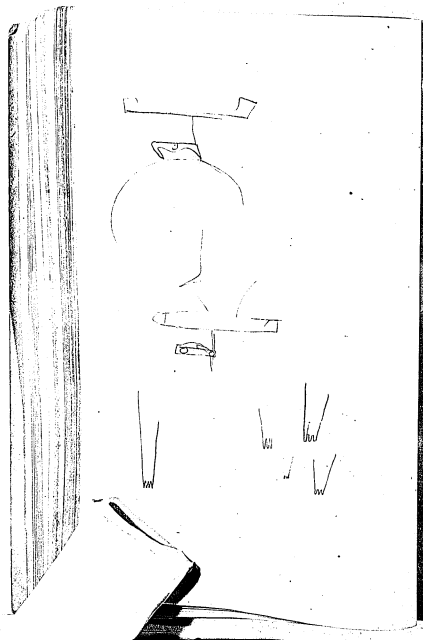
2nd Phonofilm cat Oct 1 1888 # 28




Paper cylinders
Heated in chamber
to 300 Fahr before
dipping —
also parchment
paper —

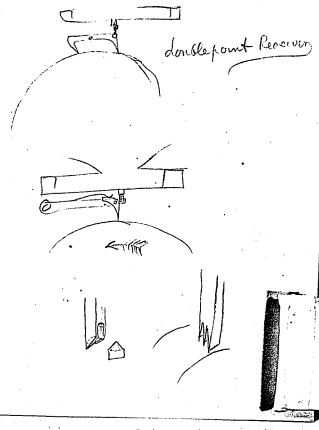
Strip paper cut
to turns or ½ laps
so outer surface
will be true —


flöte



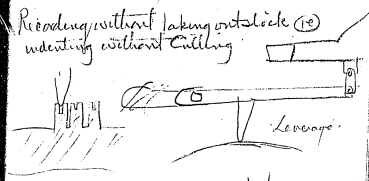
Afternoon Concert Oct 1 1888


To make Gatlin's waves abrupt



Concept Oct 1/88 TAC

Recording without taking out stick (1°) indenting without cutting

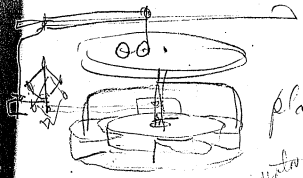



plastic Asphalt with gasan wax
or Rattan and Bedmin
Gutta Percha Coated with Palm
of Gutta, Chicle or Balata
Rubber Molasses or Flexible
Colodion for indenting without
Cutting -

phono Caveat oct 1/58

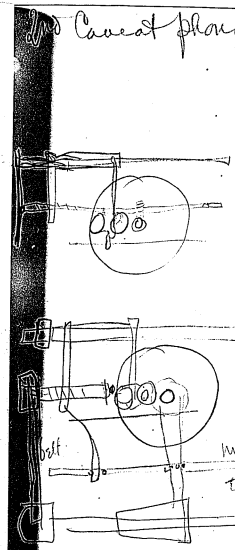
Paper shells coated with tin foil
then dipped makes beautiful
surface —

Heated paper to drum while
off dipped shell is turned ...
off time for Redipping gives
fine surface

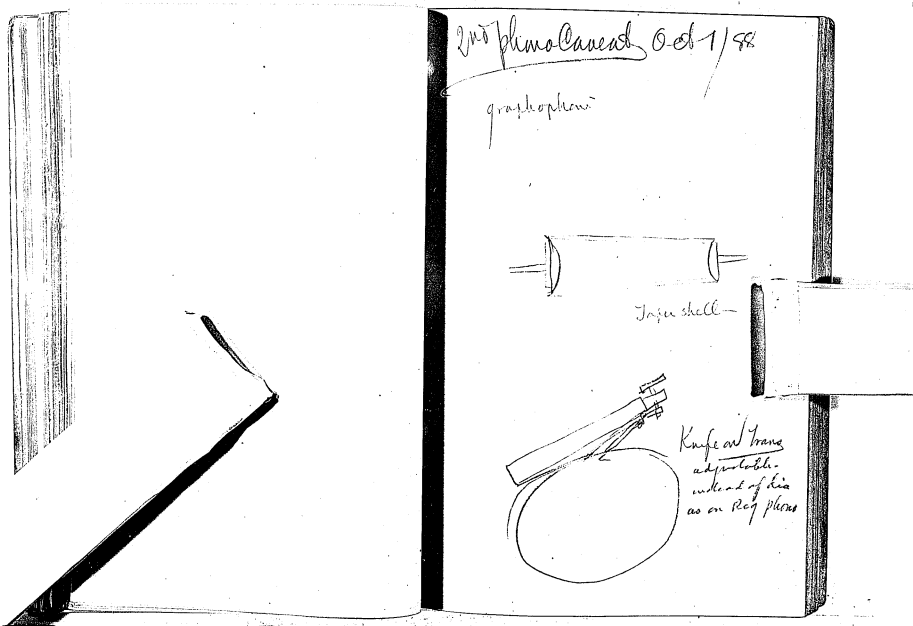


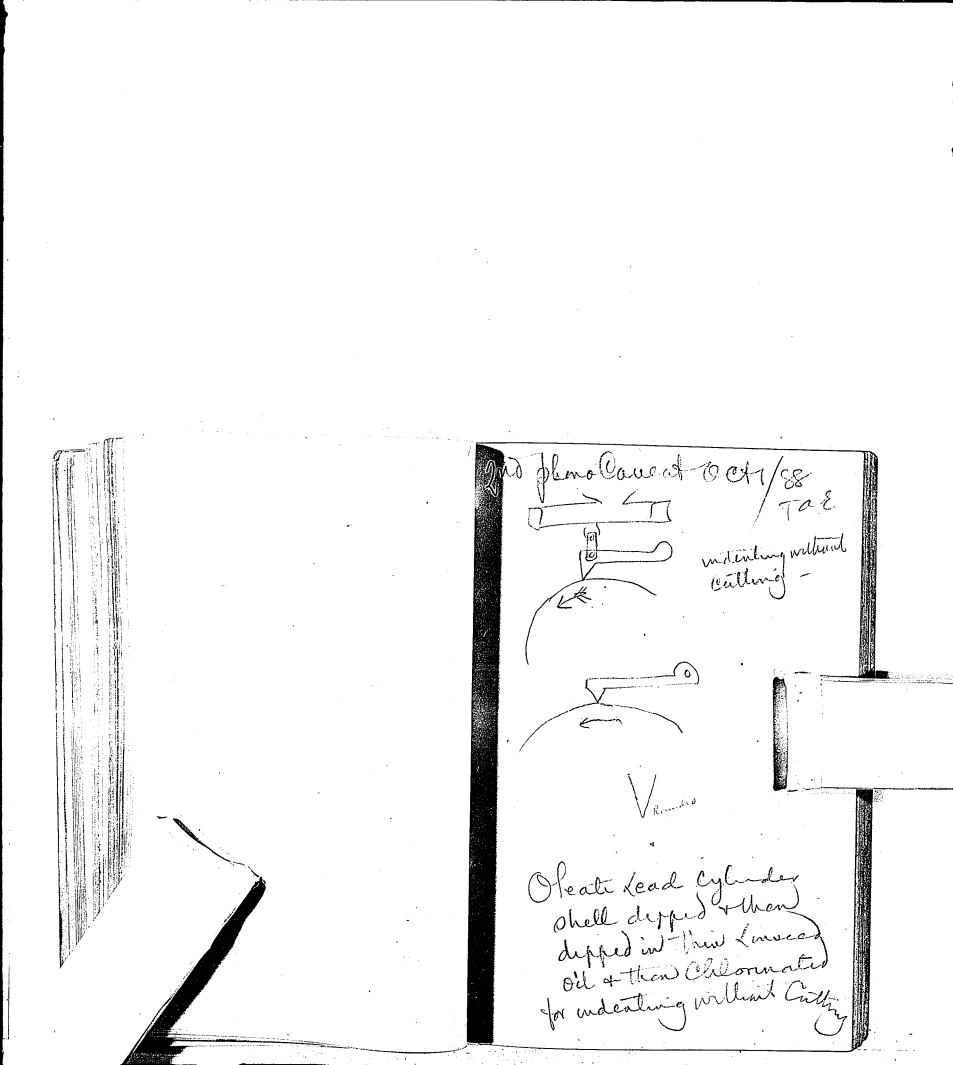

Vary Speed by
moving governor with
traveller arm.

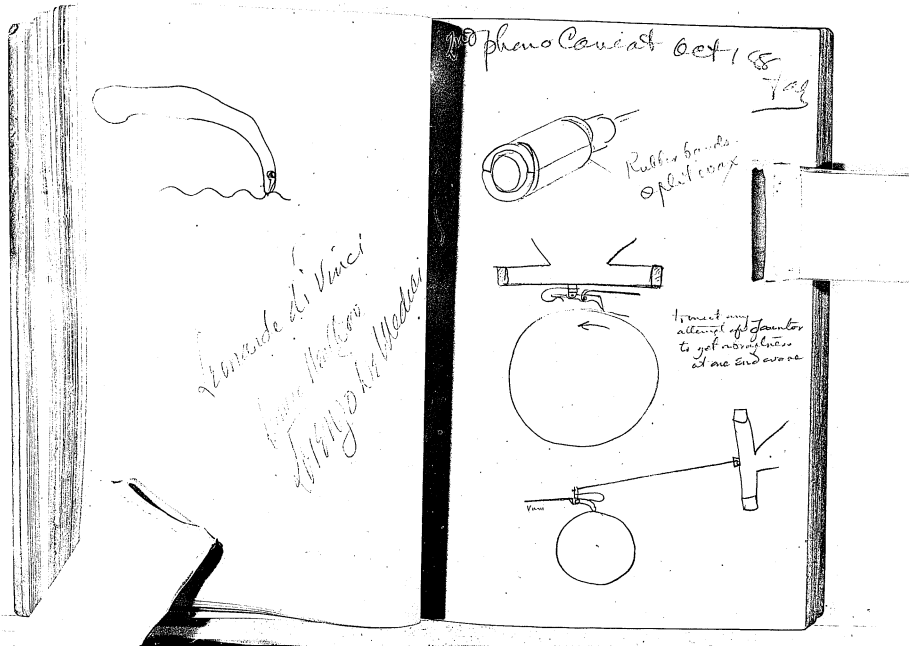
Caveat plans oct 7/88

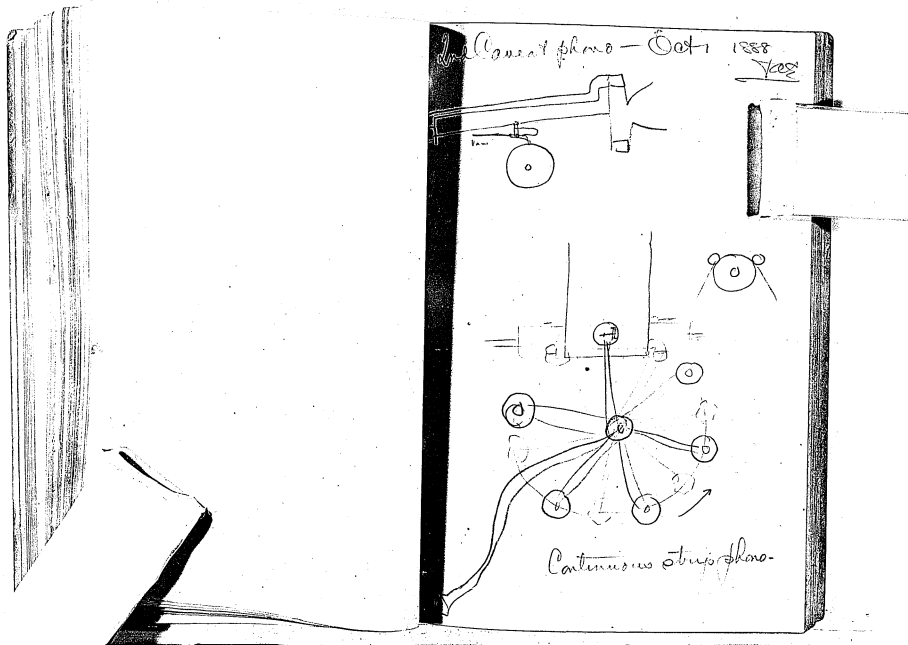



Дуплить


2nd plenoCaverd 0-ct 1/88
graphtopheni
Jaju shell
Knife on frame
adjustable
inclined of this
as on Reg plans


2nd Photo Cave at 0 C+1/88
T&E
indenting without
cutting -
Oleate Lead Cylinder
shell dipped & then
dipped in Thin Lucca
Oil & then Chloronated
for indenting without Cutting


Leonardo da Vinci
Trattato della Pittura
Phenocaviat Oct 1 68
Rubber bands
Vase

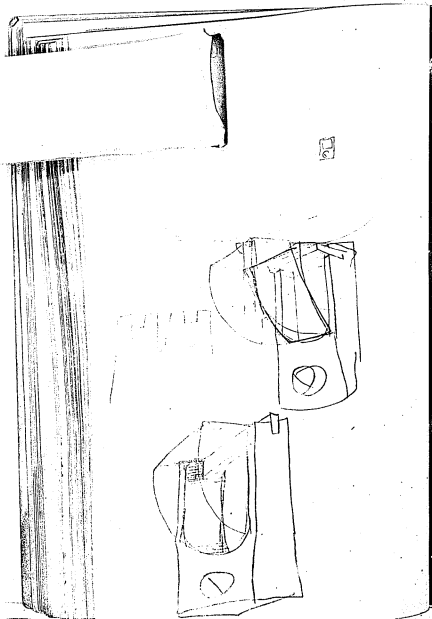

Clement phono — Oct 1888
Yes?
Continuous strip phono-

Ind[ia] mo[del] Cancer Act 1 1886

for shells heated then dipped
then turned off then reheated
second dipping after turning
gum Sandrac

Soft material such as Aleuri
lard grease wax Stearine
pitch or fatty Oil pitch etc
as for [illegible] turned off & then
dipped in a Bowl of
alcohol Bitumen in Benzoin
Carbon in Benzol, Japan
Varnish etc to give a
polished Elastic Substance
Soft material then cut
or indent with [illegible] Cutting

Asbestos for shells & thorn.
Coated

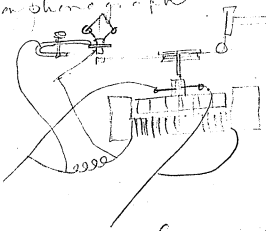


2nd Phase Experiment

SPt. I Tapping of blood from a flat cleavage

Its use as Control Scanning

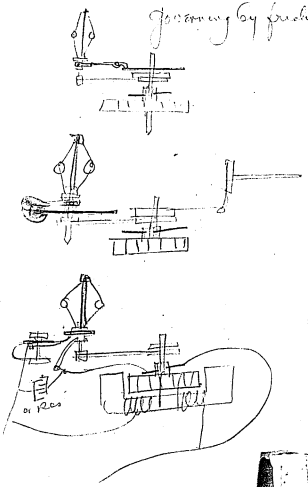
Photograph

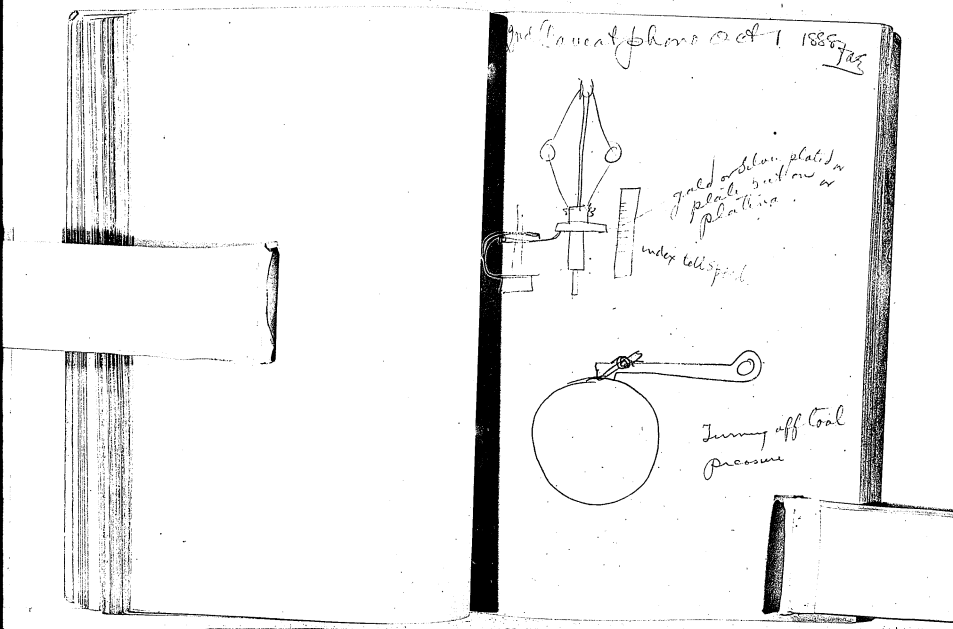


Governing by strengthening

Mr Conradyshino Oct 1 1888

Jeremy by Jerusha




gold or platinum plated
platinum
under cell spindle
Screw off Coal
pressure

Oct 17 1888

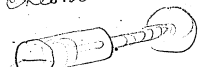
Boiling Cylinder

Oleate of Aluminum mixed with hard Oleates, ditto Stearicate)

Chemorbeate of alumina also Magnesia

Gelatin mixed with albumen & various [illegible] gluens

Finely divided powders like Kaoline, Tri Hydrate alumina etc mixed with Aluminum Magnesia Oleates or Chloroleates



Squirter

Oct 17 1882 2nd photo Carnival

Camphor as a base mixed with non volatile ingredient for flexible Collapsing Cylinders

Gum Tragacanth as a flexible binder. glue,

Sheet Tin.

Tin + Lead alloys or other alloy that cuts Easy not drag

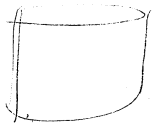
Chlorocarbonate lead.

Fused Chloride Silver

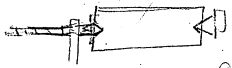
plastic Sulphur

~~Wax~~ Collodion as a flexible binder

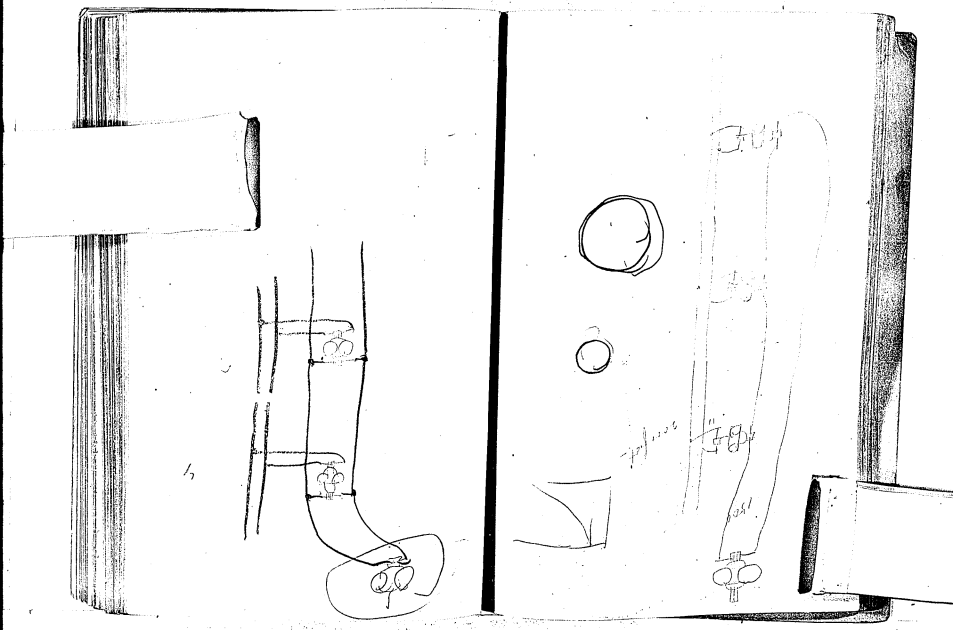
Oct 17 1888 2nd photo Caveat
7 of 7

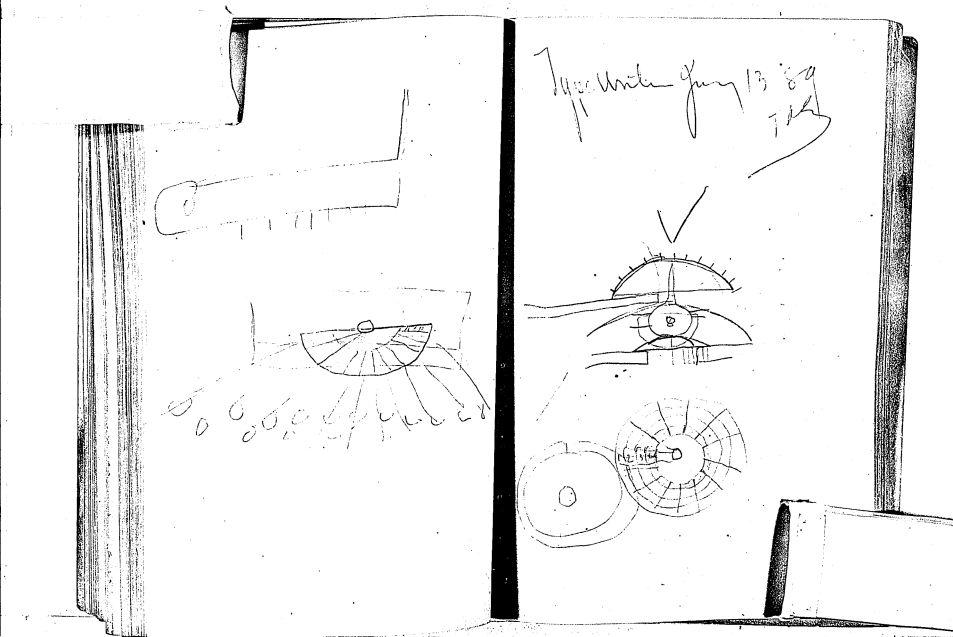


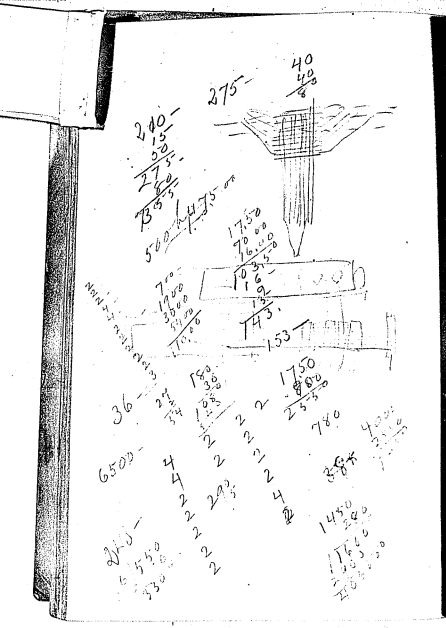
Solid Wax Cylinder

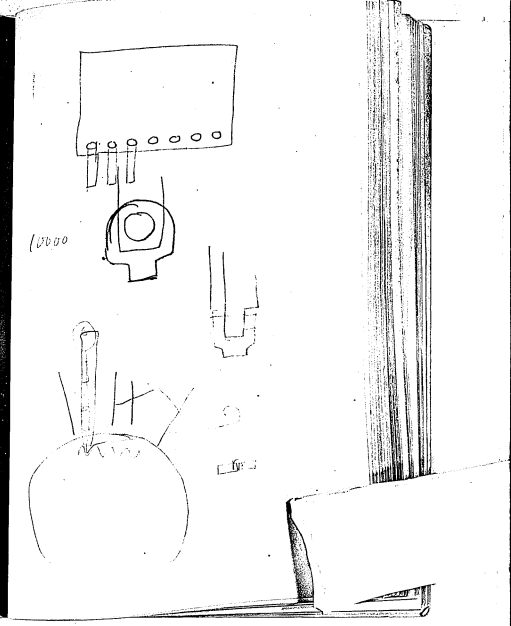


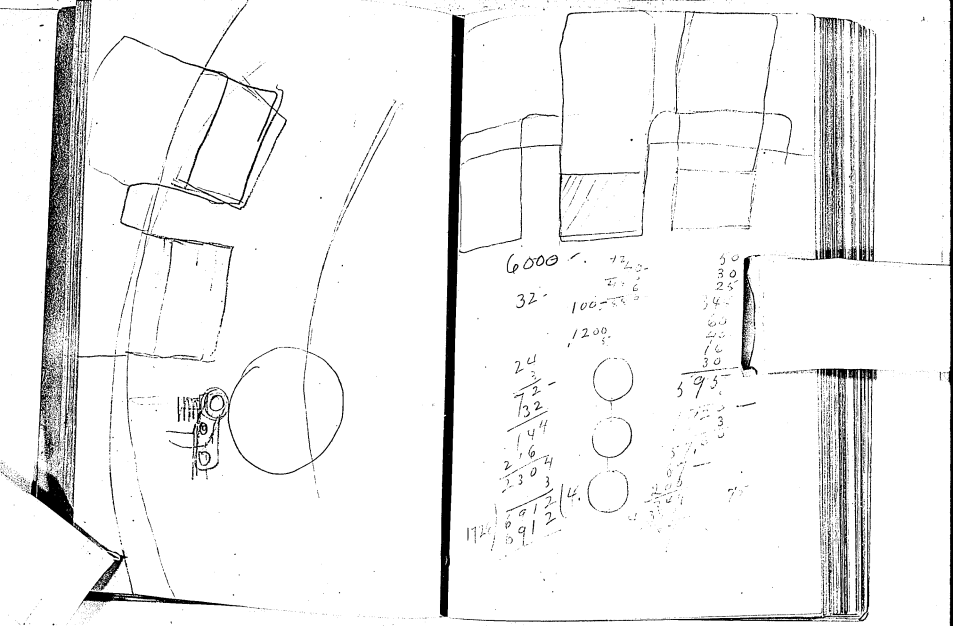
Sent to Caveat by Mail

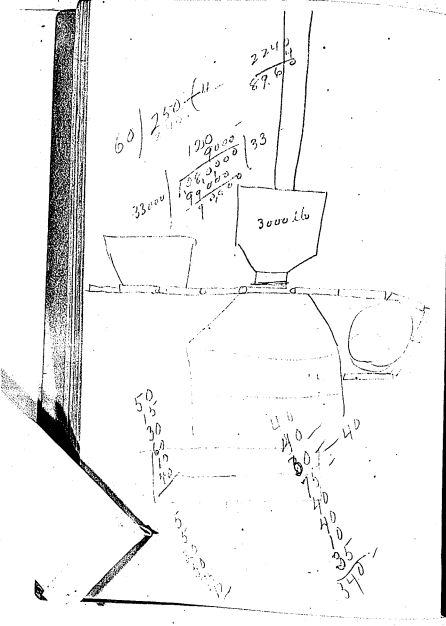


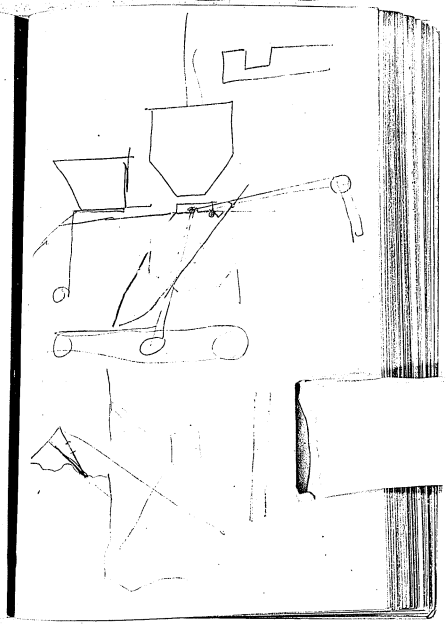

Type Written June 13 '89
T.A.B.

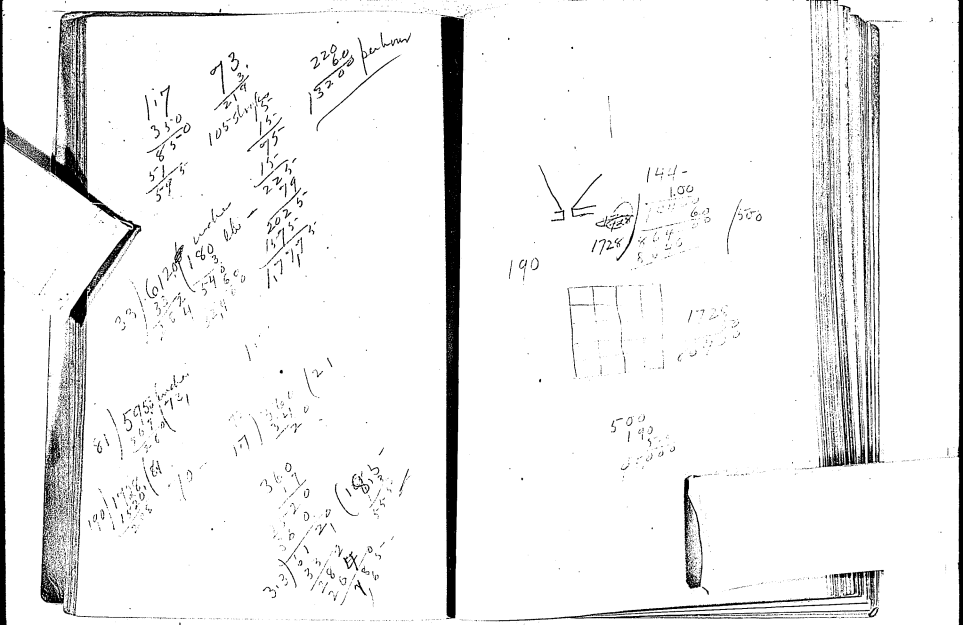


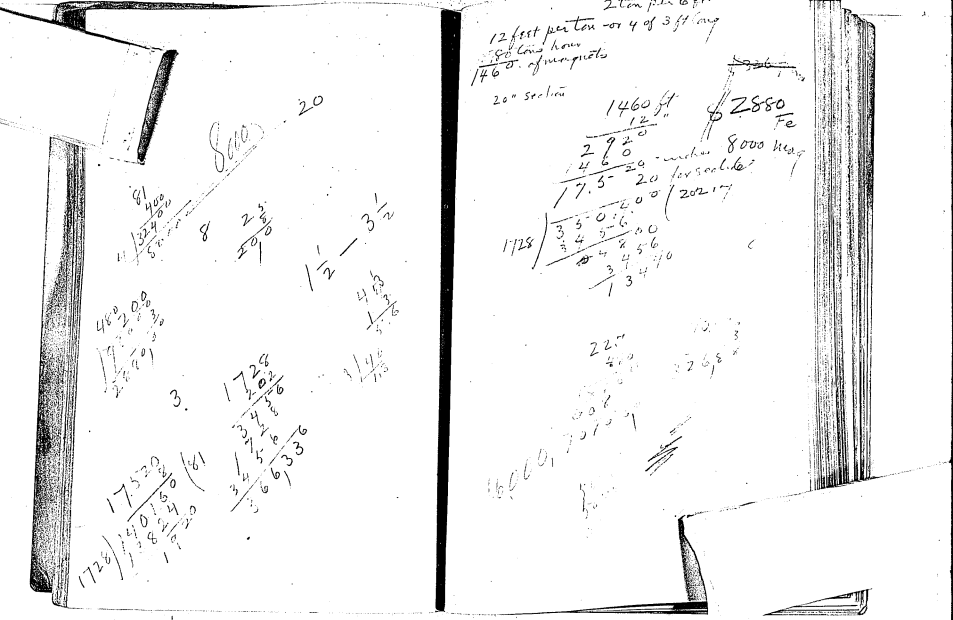


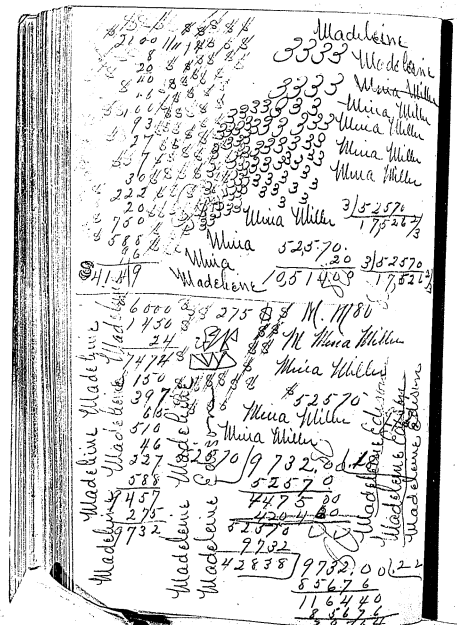

6000
32
100
1200
595

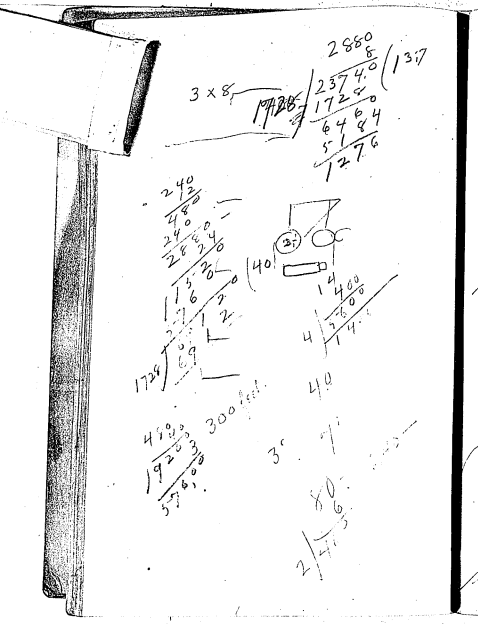

3000 lb








Madeleine
Mina Miller
M. Mina Miller
Mina Miller
Madeleine
Madeleine Madeleine Madeleine Madeleine Madeleine Madeleine Madeleine



3 × 8

17286

2880
8
23740 (137
17286
64684
51276

240
480
2400
2640
1320
660
330
165
82
41
20
10
5
2
1
0

(40

(2)

1400
800
400
200
100
50
25
12
6
3
1

1734

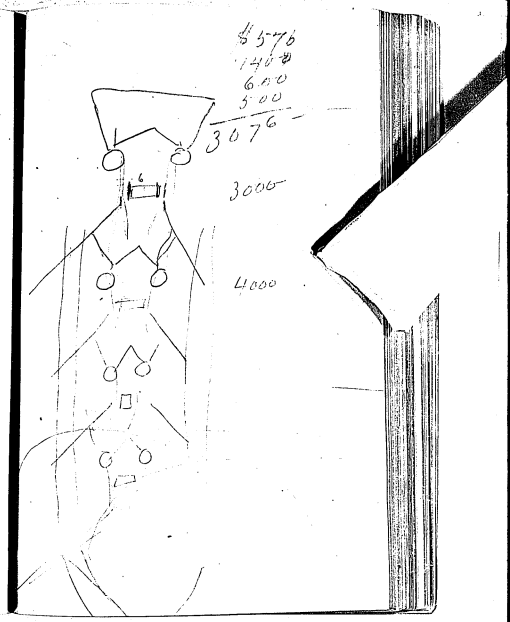
40

300 feet

4123
1920
960
480
240
120
60
30
15
7
3
1

3' 7"

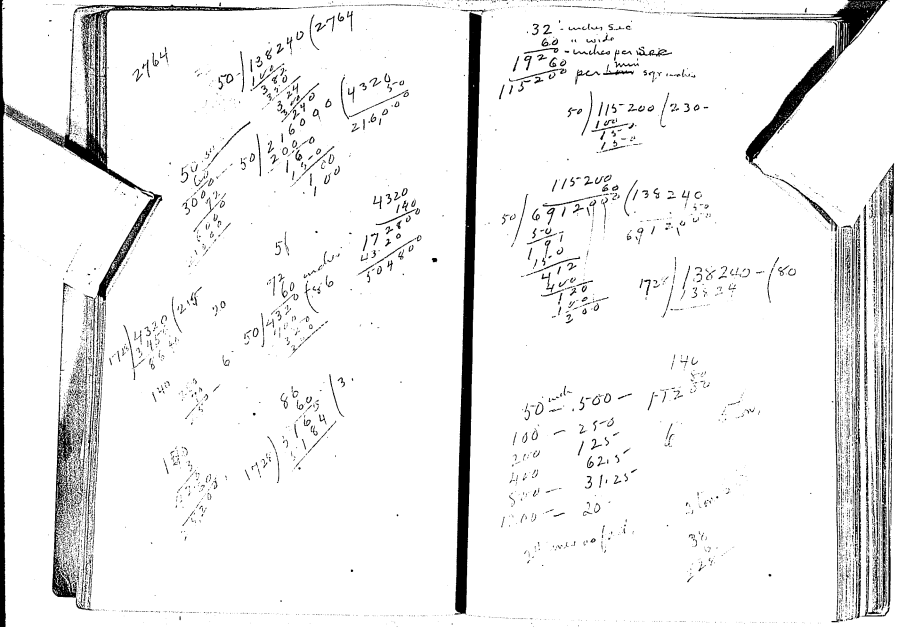
80
40
20
10
5
2
1

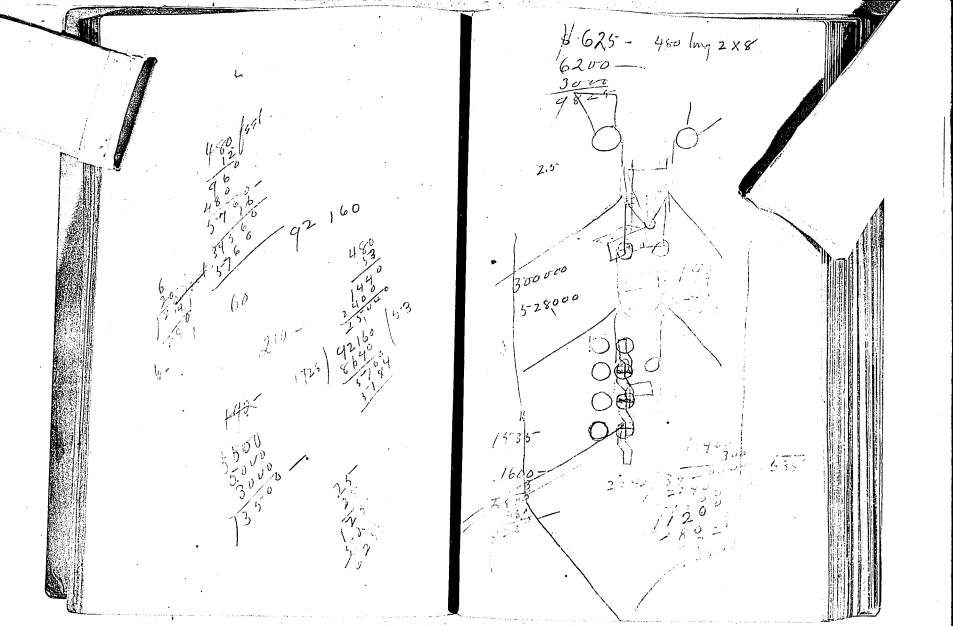


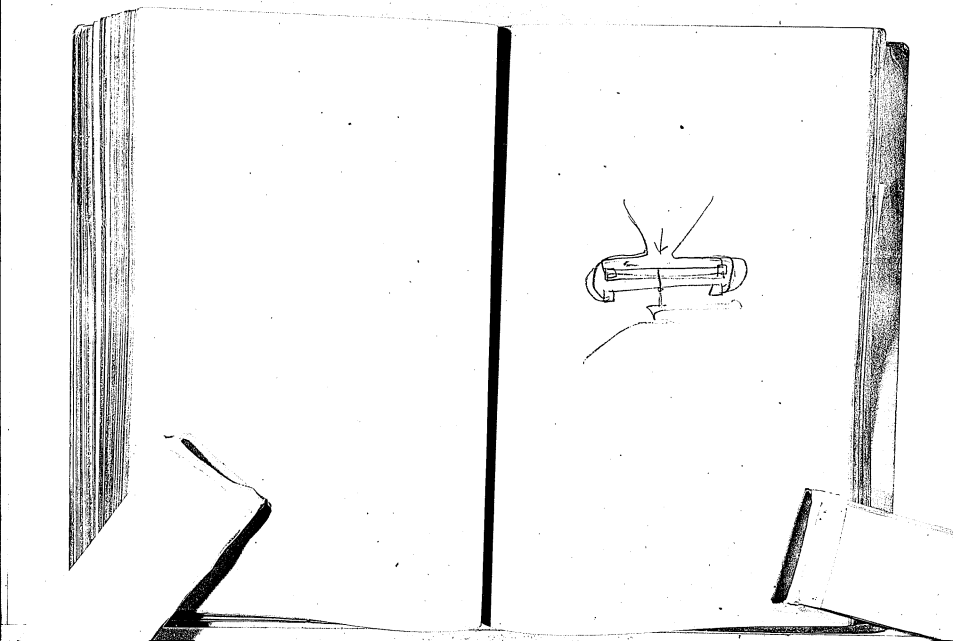
5576
1468
600
500
3076

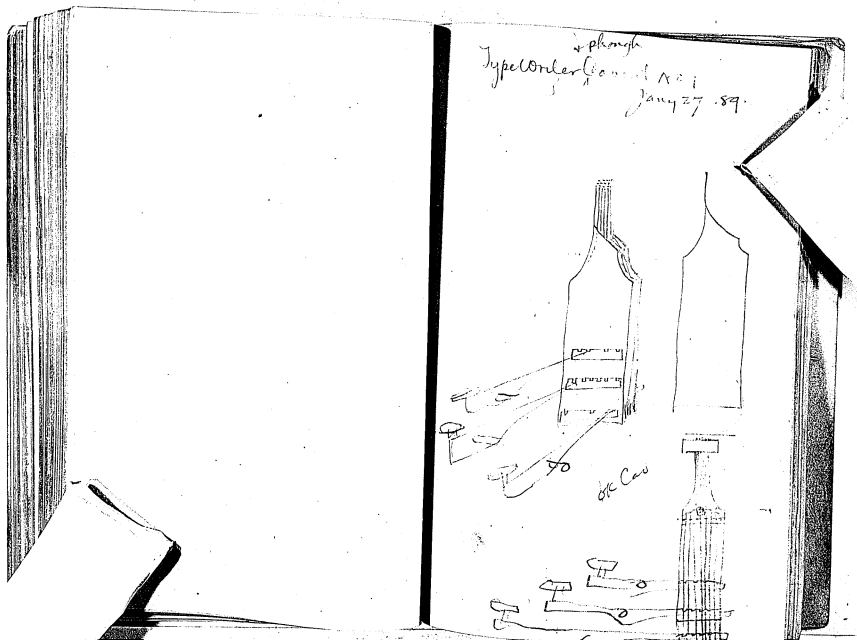
3000

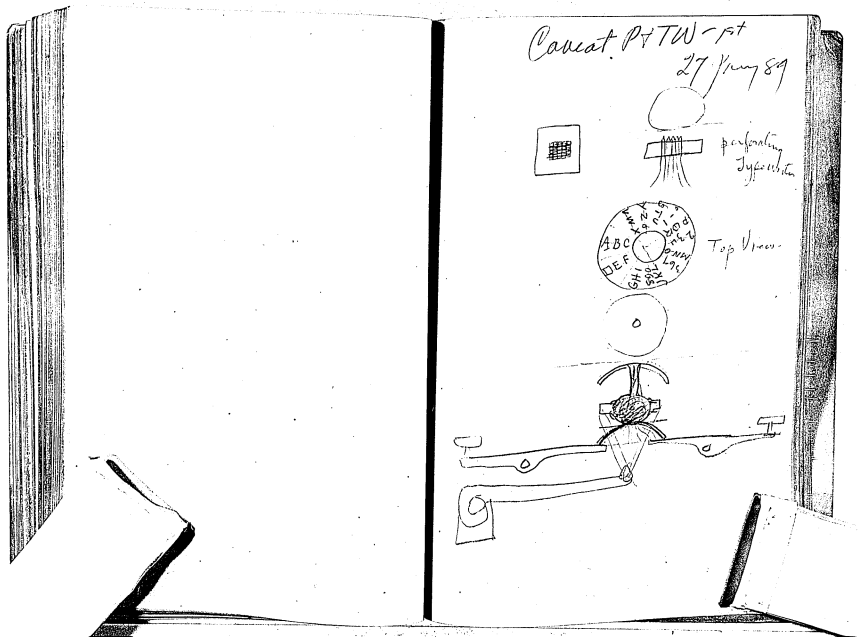
4000



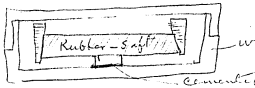




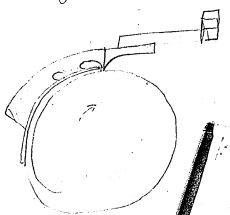

Typewriter
Jany 27. 89.

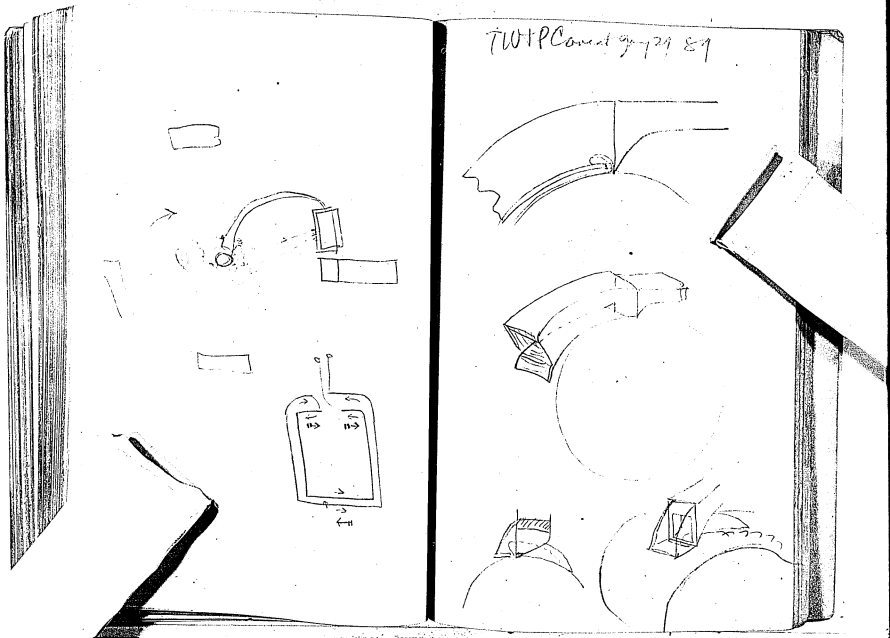

Caveat PTW-PT
27 June 89
perforating
Top View

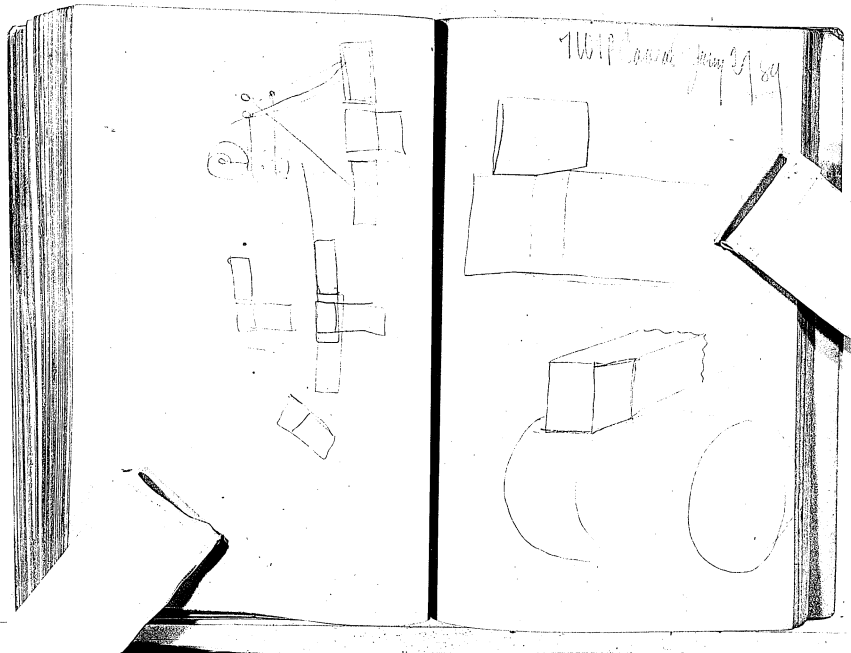
Concept 1st TWTP Jan 27 89 —

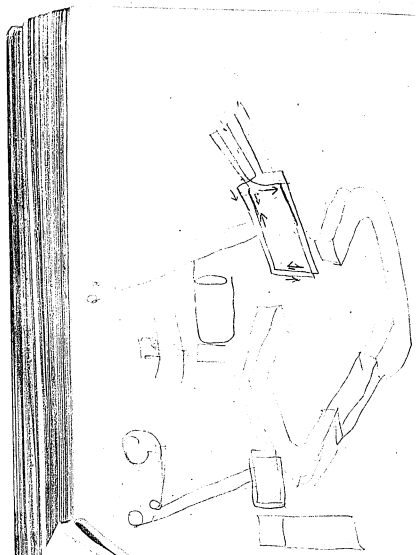



Marking




TWIPCont'd 9-7-79 &9



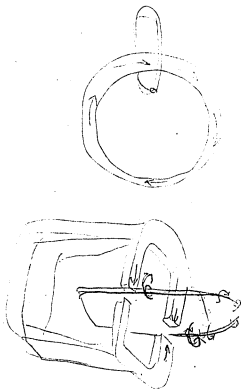


JWP Cawtat ge 7 27 89

Sachs Saphire to holder -
Cement it -
Molybdenum
Manganese Steel
Case hardened Steel,

phos bronze -
Let [illegible]
other way

Copper Solum or Brass pad
plated ballast to floor
Contact piece =
Shunted =



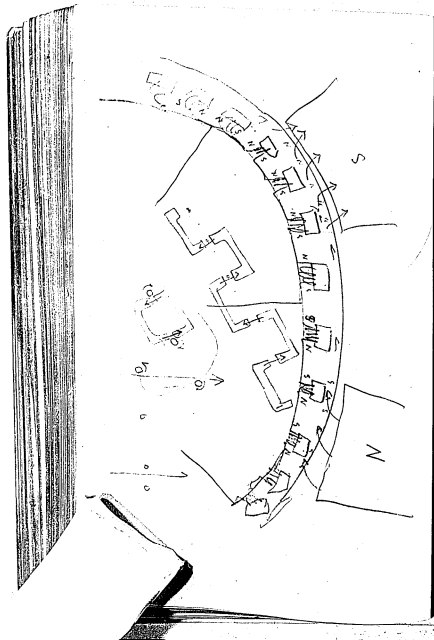
JWTPCar- Jun 27 89

Marking

Cardboard
wound over rod
Soft Pitch Leather
dipped in BRO2 Mahogany

Shellac paper
Coated with
Rubber latex
dipped -

also with Very soft
Ozocerite Satin Fly
Crude Petroleum
over it



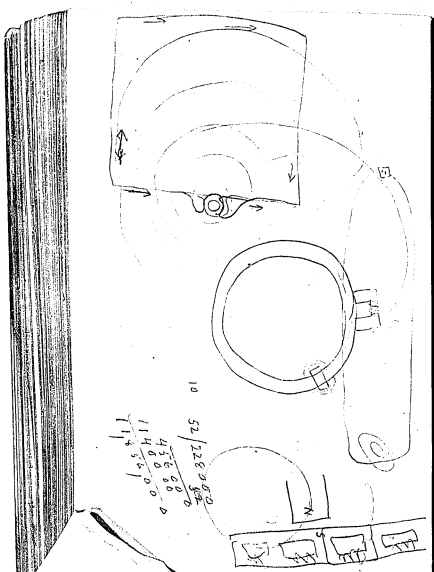
See partly furnished one with
carved in back of mould

Local Tour Sept. 89

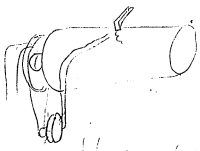
square thread was coated + reversed
in groove 30 times + screw set, made
1/2 inch of wax for [illegible]

Small Recess on side of Rig
for Graphite ring
Grooved Cylinder with grooved
Chuck to keep the grip, Same
one for filing [illegible]

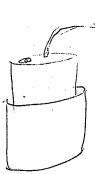
Mould polished with
plate with Turtle
then pour in wax
or No 2 or make
Taper + have groove
in + force in Open
mould + then
a fork your
Rem 94 Rockall



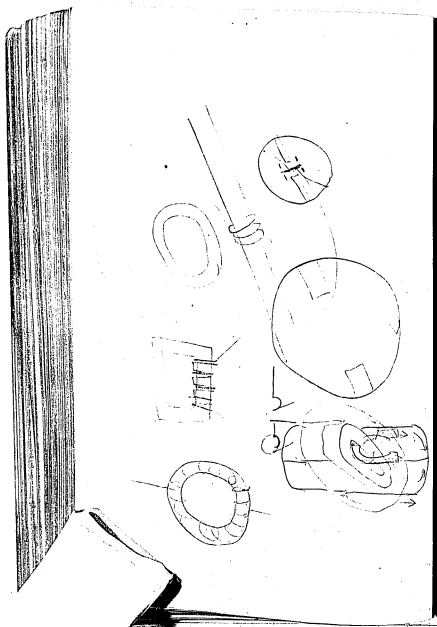
TWTP Cas January 27 89



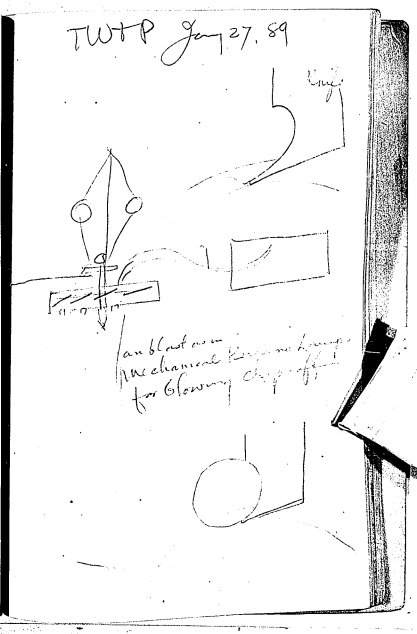
blast and frags chips



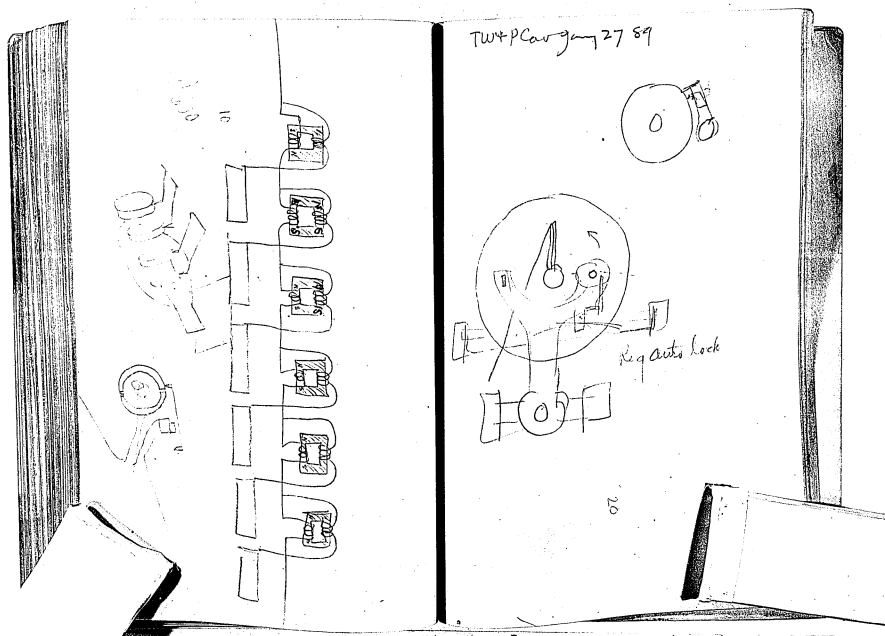
gasmeter device for blast an

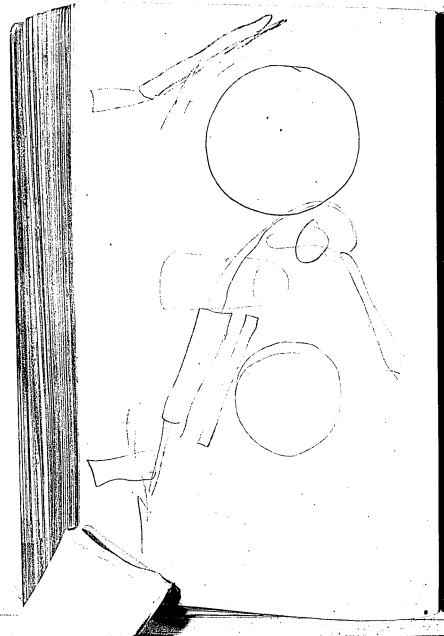


TWTP Jan 27. 89



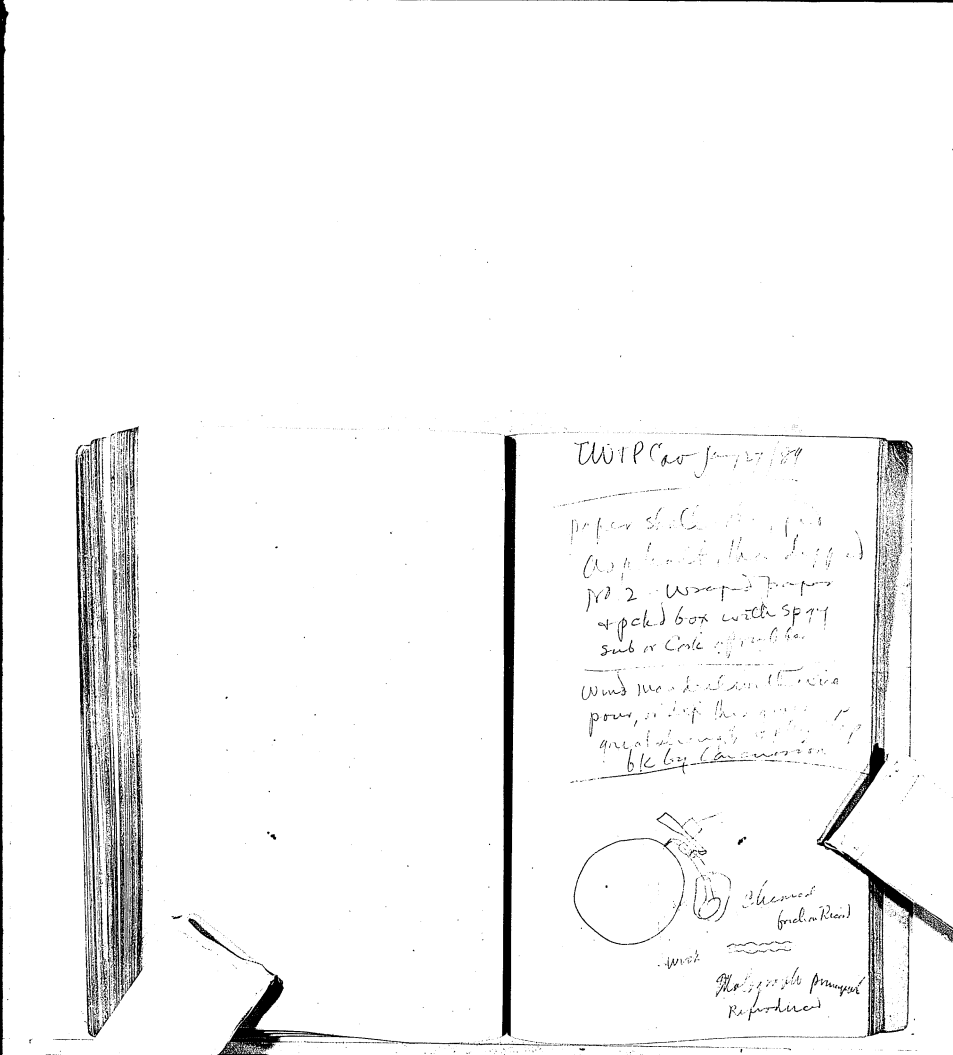
TWTP Cav - 9/27, 5:9
chip guard

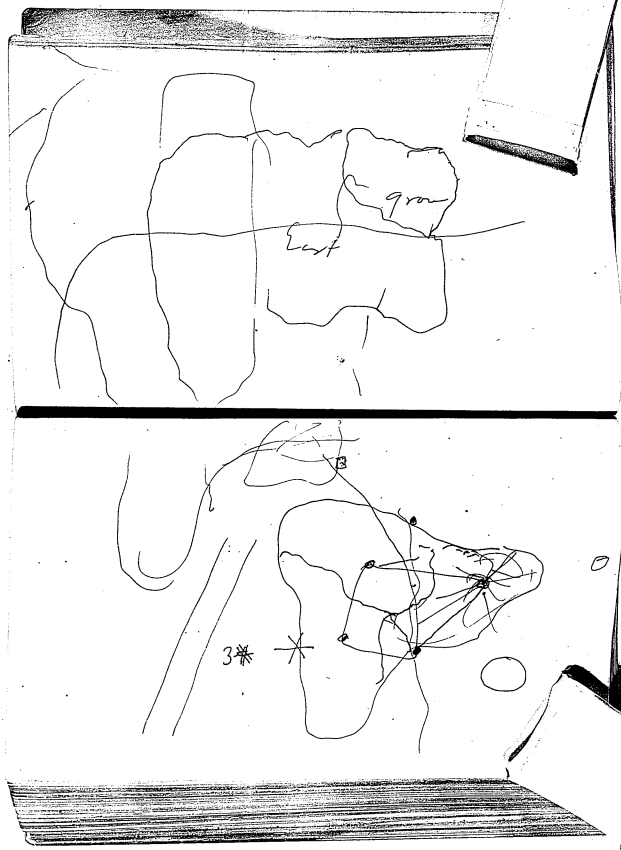

TW+PCar garage 27 89
Key acts lock
20

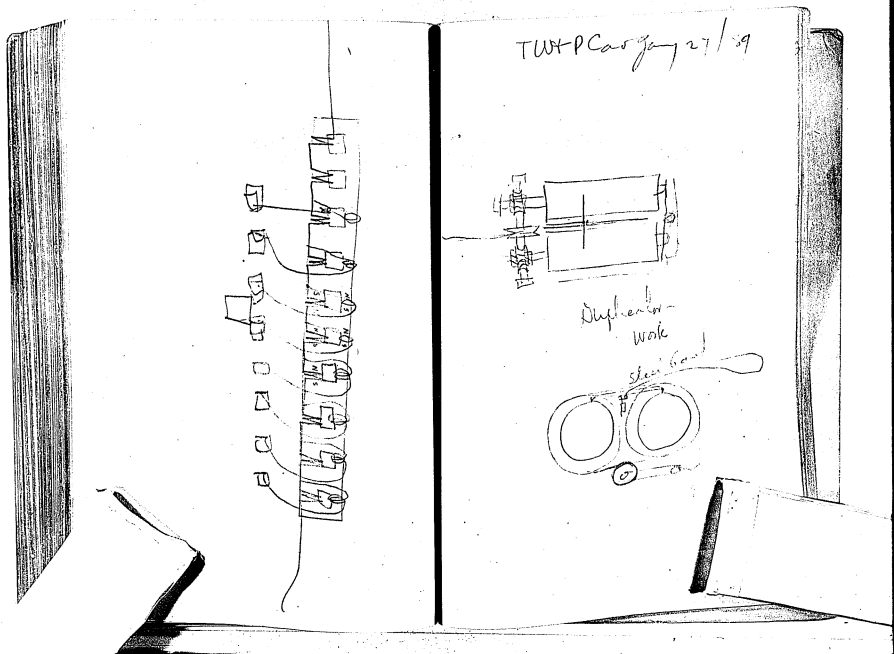


TWIP Group 21,59

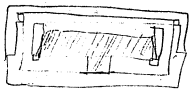
a marking Cylinder
of soft material
which before marking
is coated with an
elastic substance to
receive dye is soaked
off — also as above
but before marking immerses
in a liquid which
the inkpad to mix
Chlorine by chemical
change in the Cotton
the dye and leaves
the dye unchanged
of hand, and leaves
Chlorine as a bleaching
agent for the Cotton

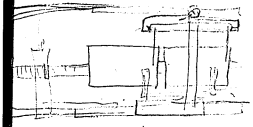

Chemical
finish on Rivet
Wrist
Photograph prohibited
Reproduced


9mm
Cast
3*


TWTP Cardigan 27/59
Deflection-
Work
Steer Coil

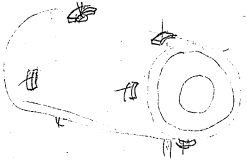
TWTP Calgary 27 89



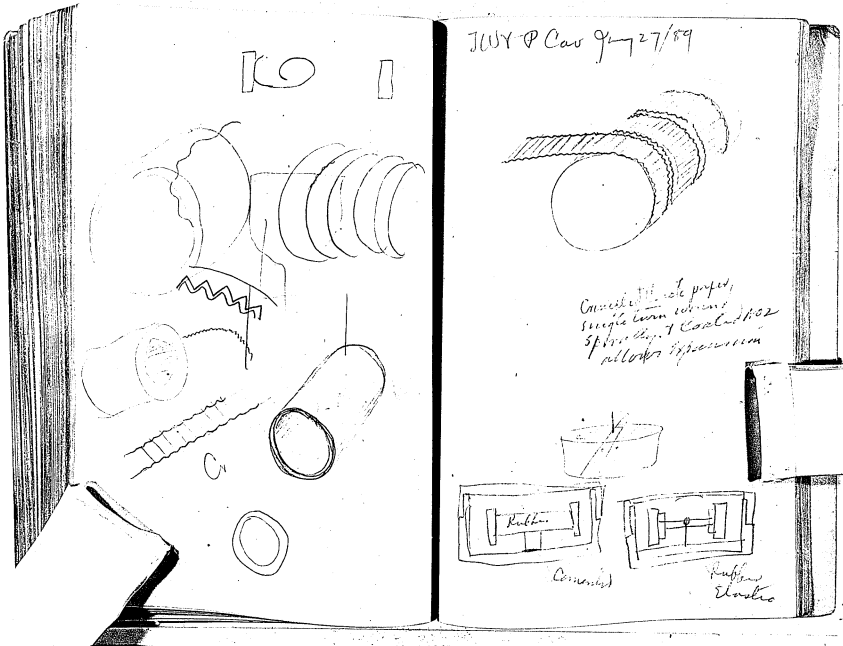


Lowering Hook

Pulleys

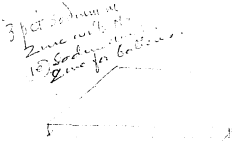


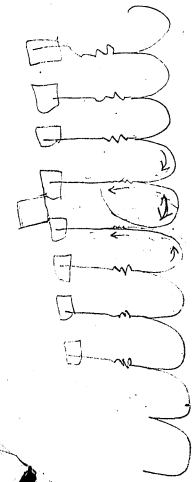
Expanding Handle


JUV P Cav Jun 27/89
Rubber
Compressed
Rubber
Elastic

TWIP Cooquy 27 '89

Marking

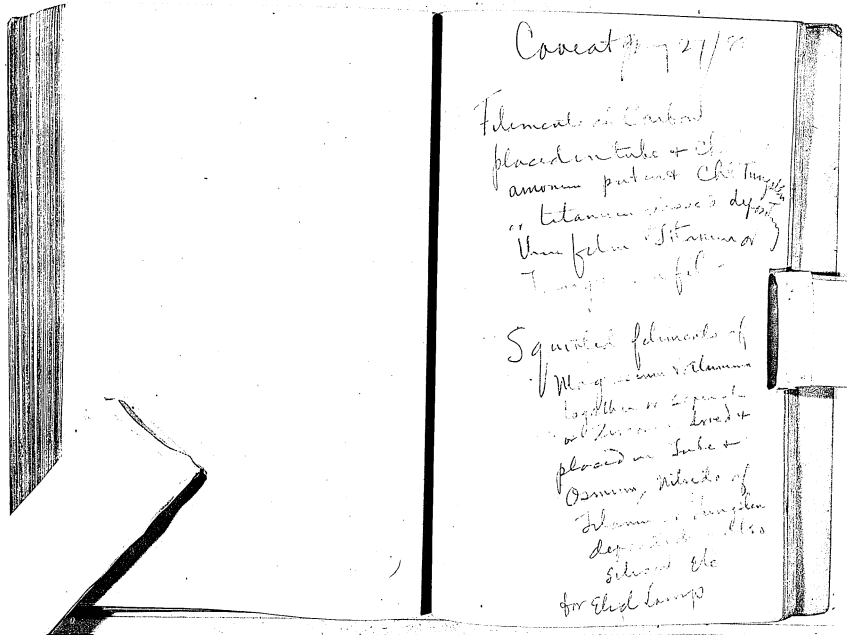


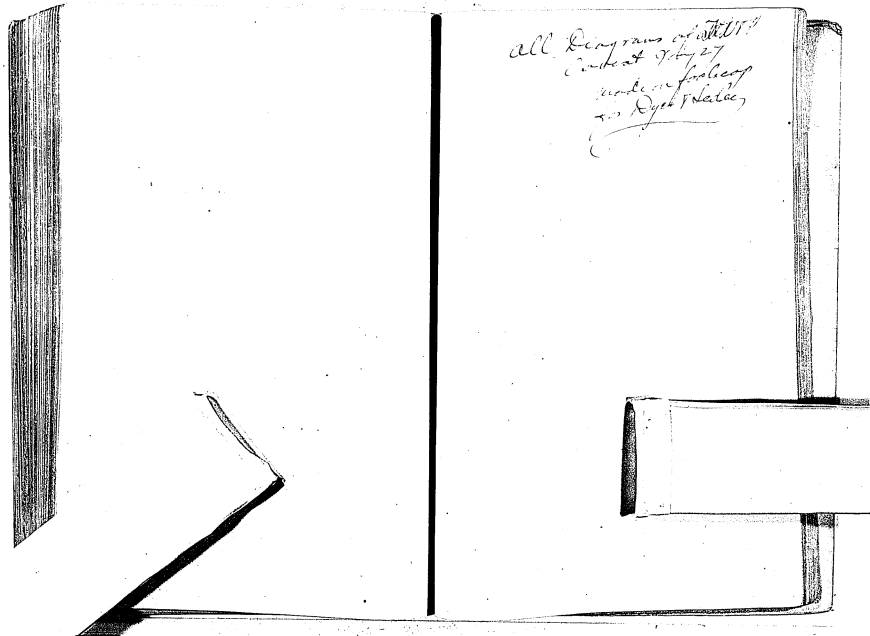


Covent Garden 27 89

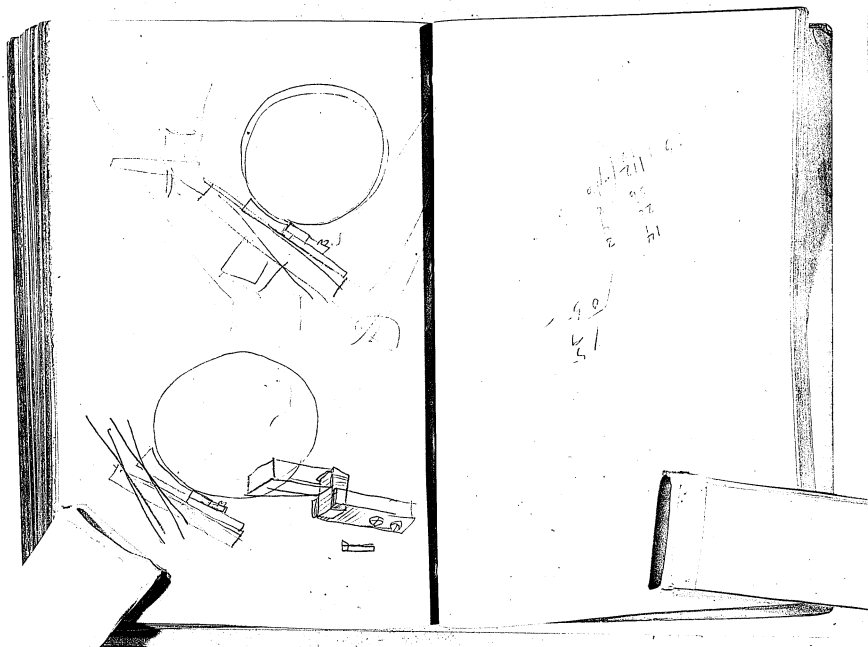
Separation pyrohalide from
Pyride, process for
separating all Heterocyclic
from Compounds from Distillate
distillate Nickel ferrous
pyrohalide from Catapult

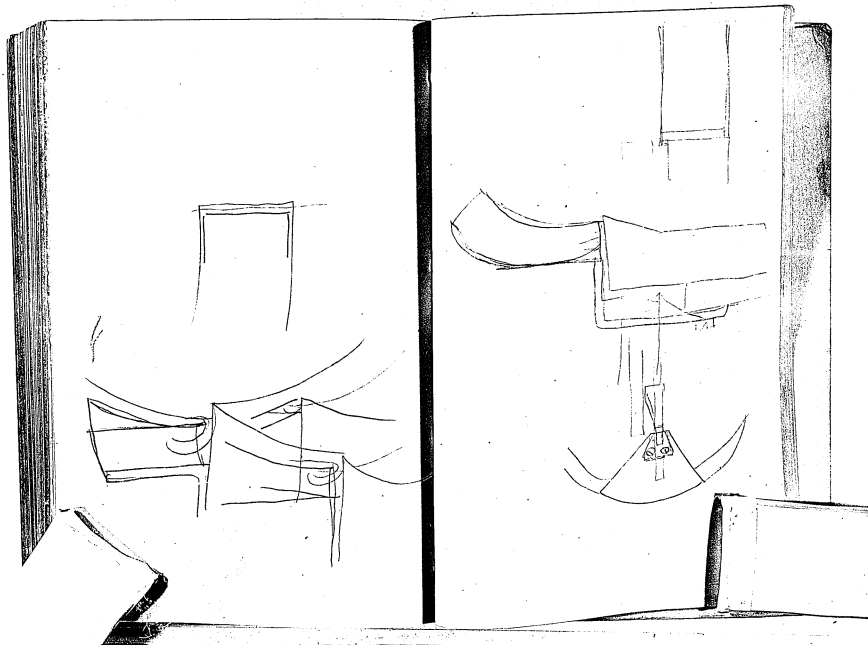
Quartz Rod coppered
oxide, platinum wire
Current of Ohms reduced
by Ammeter and grounded
Fine Gauze used or
Hg Cadmium used with
Oxide Carrying on at
or reduction to amalgam

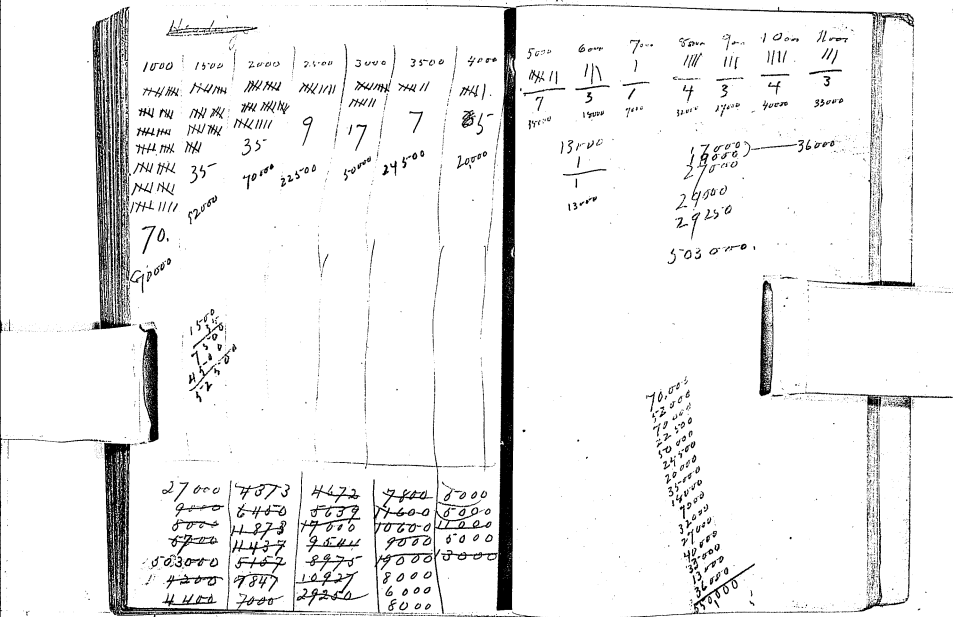

Caveat 7121
Filaments of Carbon
placed in tube &
ammonia put in &
" titanium
Iron filings
Squirrel filaments of
platinum
Osmium, nitrate of
for Electric lamps

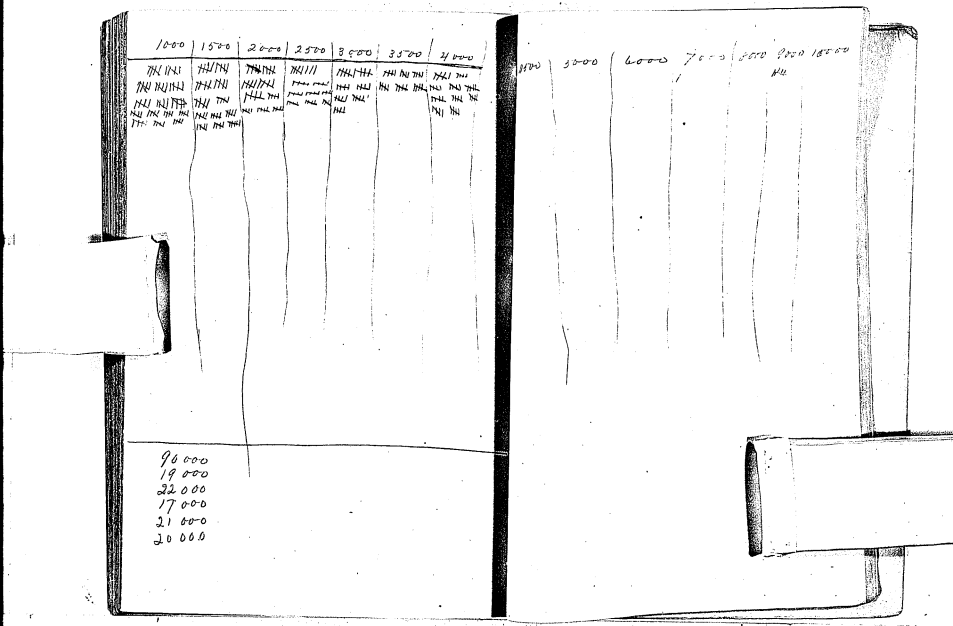

all Drawings of Mill No 1
Contract July 27
made in pencil
on Dyer & Hedley

1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
7000
8000
9000
10000








1000
1500
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3000
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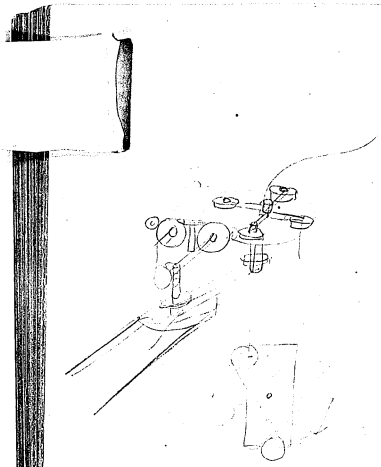
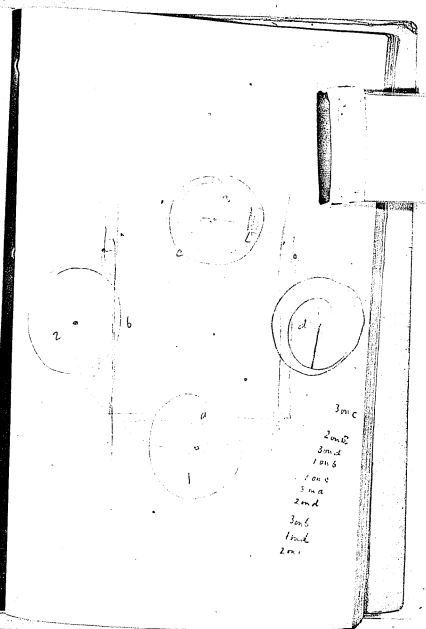
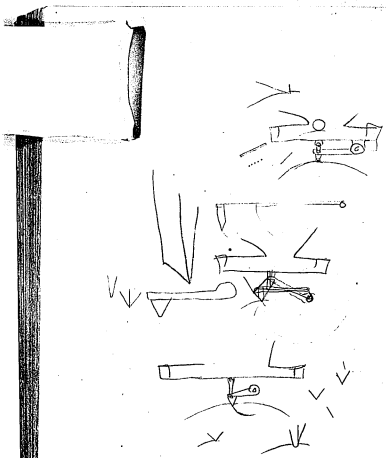
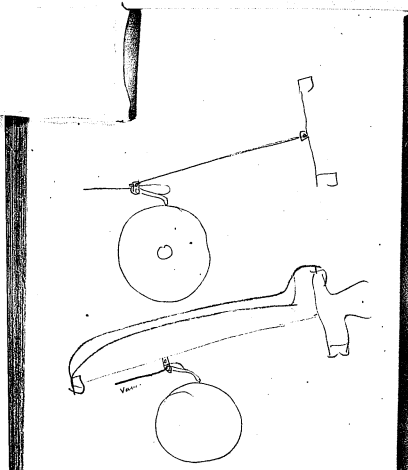
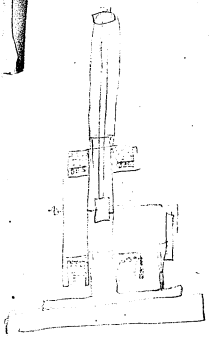
7500
9000
18500
90 000
19 000
22 000
17 000
21 000
20 000

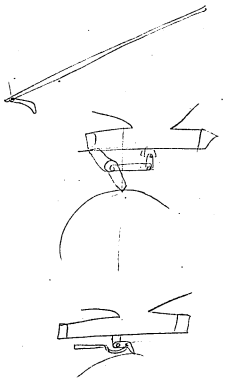


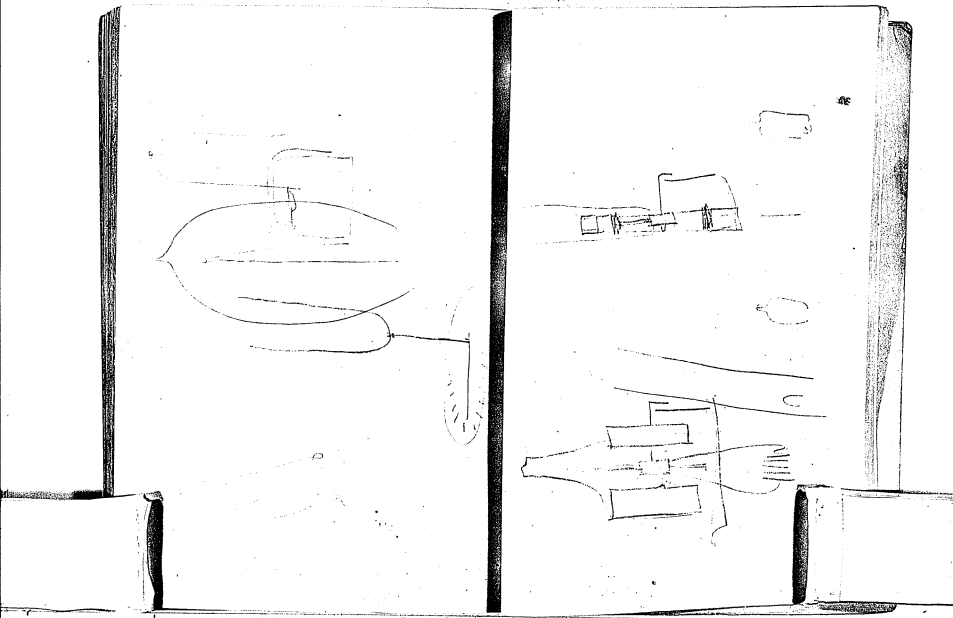

3mc
2mb
3md
1mb
1mc
5ma
2md
3mb
1ml
2m

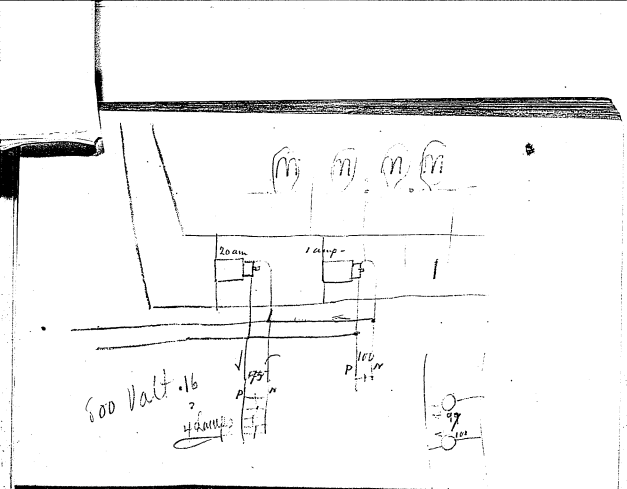




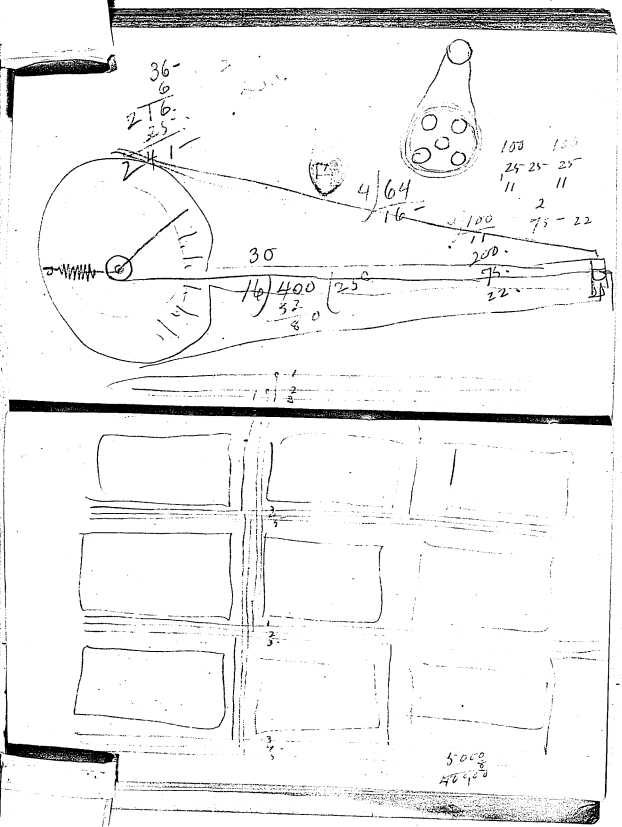







20 amp
1 amp
500 Volt .16
?
4 amps


.16
32
.64
1.28
2.56
.16


36
6
2 16
25
1
4 64
16
30
400
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8
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100
200
75
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155 155
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75 - 22
5.00
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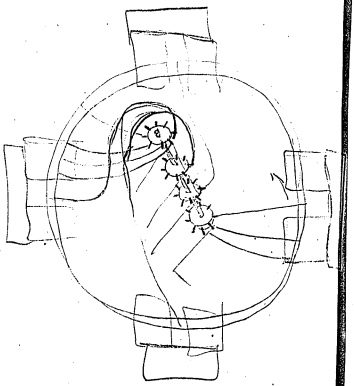
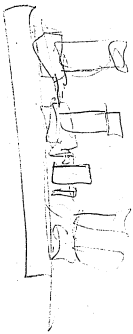
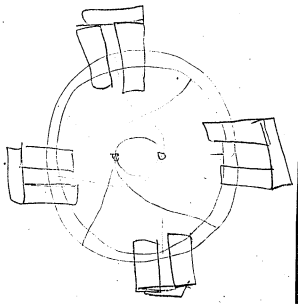
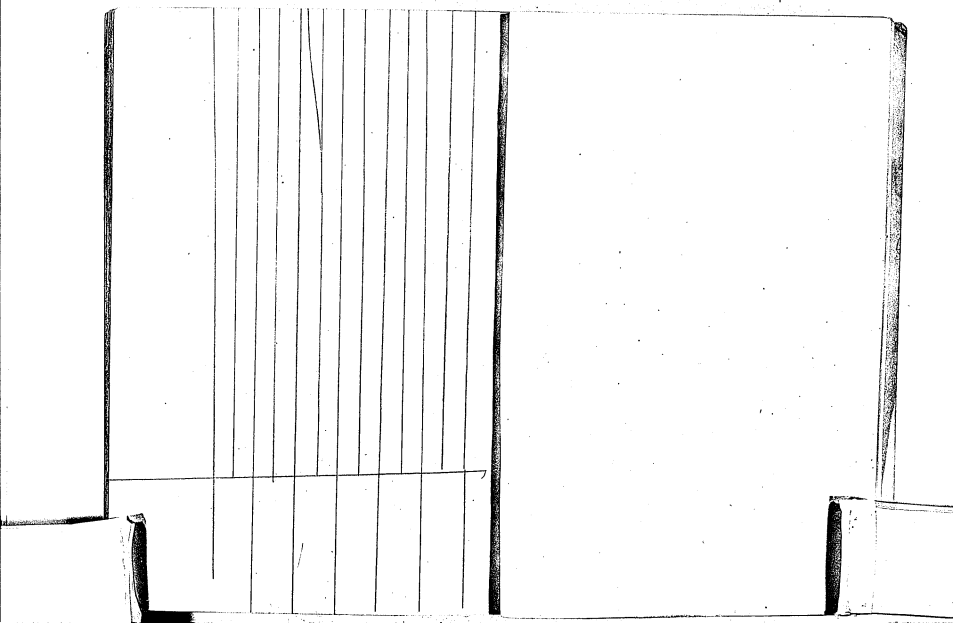








| Name of chemical | Jvanadorff | | Merck | | Cooper | | Powers Weightman | | Lunas Arsenic | | English of DTC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb | oz | lb | oz | lb | oz | lb | oz | lb | oz | lb | oz |
| Acetone pure | K 75 | | K 75 | | 1.25 K 360 | | | | | | | |
| Acetamid | | | K 4.25 | | | | | | | | | |
| Acetal | | | K 2.25 | | | | | | | | | |
| Acetone Com | | | K 50 | | | | | | | | | |
| Acetic Acid 1.040 Com 30pt | | | | | | | | | | | | |
| " Pure | | | | | | | | | | | | |
| " CP 1.062 50pct | | | | | | | | | | | | |
| " CP | | | | | | | | | | | | |
| (Anhydrous Acetic Acid – Antimonic Acid) | | | | | | | | | | | | |
| Antimonious " | | | | | | | | | | | | |
| Arsenic dry pure | | | K 50 | | | | | | | | | |
| Com Arsenious Acid) | | | K 62 | | | | | | | | | |
| Pure Arsenious Acid) | | | K 52 | | | | | | | | | |
| As-paracynic Acid (Arsine) | | | D 4.50 | | | | | | | | | |
| Benzoic Acid 9gms " | | | | | | | | | | | | |
| " Anhydrous | | | | | | | | | | | | |

Skanga

30

16 R 20
3 20

2½ — 2½
175 —
125 —
400 —
80 —
25-300 —

[ITEM FOUND IN BOOK]



Gladstone -

Please drop your present Experiments for a while and go on the following - I want to get a better Phonograph Cylinder, One that will be hard like Carnauba Wax but not so Brittle, one that the tool in the phonograph will turn off polished & take a Continuous Chip or partially so & leave the Transmitter or Voltaic recording Knife will cut a clean shining groove - I will give you a piece as a sample - I find that while Mr Payne has obtained a cylinder which is perfect It is formed of materials which cause it to act as an Electrophorus, The turning off tool Electrifies the cylinder & chip & they are electrically attracted to & stick to the Cylinder & when blown off are attracted & stick to everything -

The first Case I want you to go on is White Glue this can be melted with water by suspending a dish in hot water. As softners of Glue use the following in various proportions Glucose — Molasses — Caramil Grape Sugar Glycerine, Generally some of the thick fluid Extracts from Herbs - we have them all -

If you find even the smallest proportion of these soften it too much add the following hardeners & Then add or not as may be necessary Some of the Softeners, The object of the softeners is to cause the Glue to be continuously soft after the Same has been cooled from the hot pour The object of the hardeners is to diminish the tenacity of the Glue so the Cutting tool will take a chip easily & not tear

[ITEM FOUND IN BOOK]



You will notice that the softeners are bodies that never get hard and are unacystalline bodies & all soluble in water -

The hardeners may be any gum or resin soluble in water among which may be mentioned

Ordinary Gum Dextrin, Gum Arabic. Logwood Extract. Albumin - Picric acid - Jalap Resin. Aniline Violet & other Aniline Colors and a host of uncrystalizable substances soluble in water which give brittle mass on Evaporation of water - Annatto. Ammonio-Citrate Iron Boiled Starch -

2nd Base

Use Gum Arabic as a Base and following as softeners, Caramel, Albumen - Glucose. Glycerine, Chloride Zinc, Phosphoric acid - Glue or Gelatin, Boric acid - Brick Mass - Aniline Colors Oxalic acid Lactic acid - Cyanide Potassium

Repeat with Gum Dextrin as a Base

**Notebook, N-88-11-02**

This notebook contains dated entries from November 1888. All entries are by Edison. At the beginning of the book are undated notes and drawings relating to phonograph designs, cylinder compounds and designs, and insulation compounds. There are also notes and calculations regarding electric lighting and a memorandum about a combination with Thomson-Houston. At the end of the book are notes on chemical experiments, a drawing of a dynamo armature, and notes and drawings pertaining to phonograph designs. The pages are unnumbered, and the book has been used in both directions. Approximately 140 pages have been used.

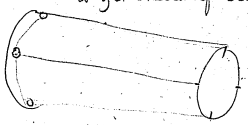
N-88-11-02

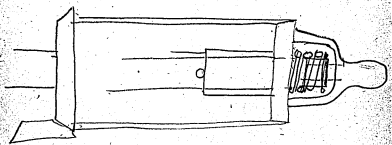
4

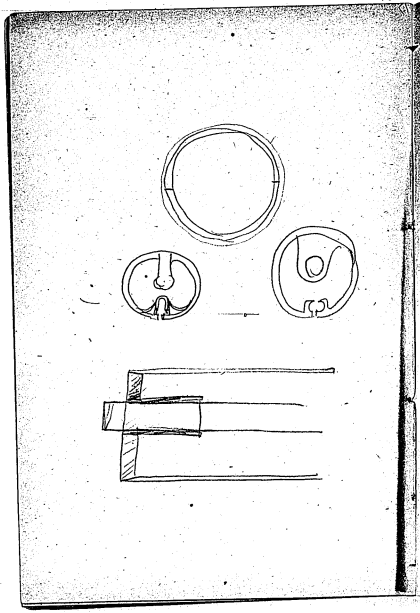
Try Chlorine Compounds
Heat so as to Liberate Nascent
Chlorine in all the Waxes
Oils + Pitches, Asphalts,
Bitumens + Balsams to
dehydrogenize them to increase
percentage of C to H,
if CP stored from HCP + also a
CP atom replaces a H in addition
then After Compound has been
dissolved out from CP salt,
it can then be dechlorinized
by boiling with Zinc or Iron
dust —
Thus with Asphalt perhaps a
Solvent Compound could be
obtained very rich in C
which was baked in oxygen at
700@800 Fahr + pipe melt
before Carbon

In the Carbonaceous matter
obtained by Dehydrating Organic
Compounds / by reducing out
Compounds which soften at
high temperatures but do not
melt,

Taper phonogram Cylinder
to get shells of Edison

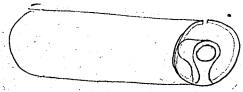




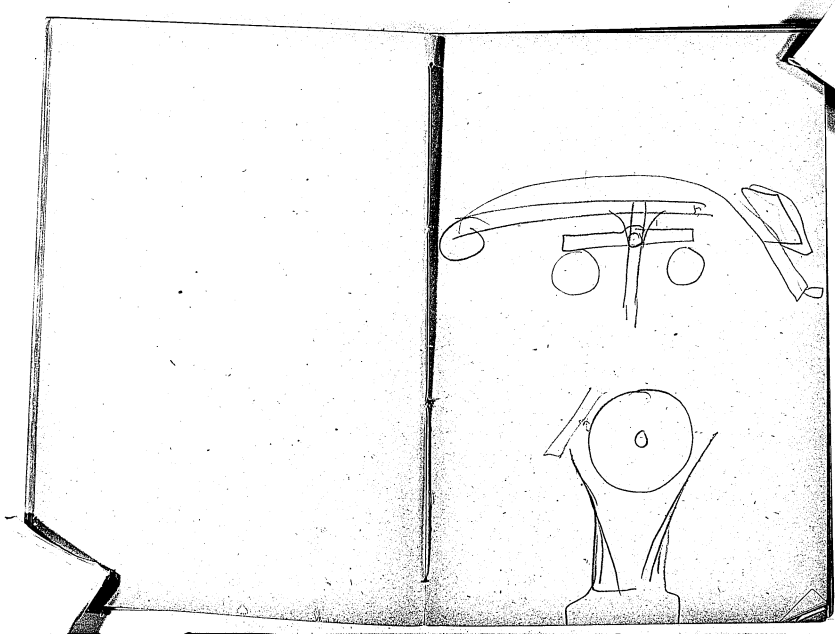


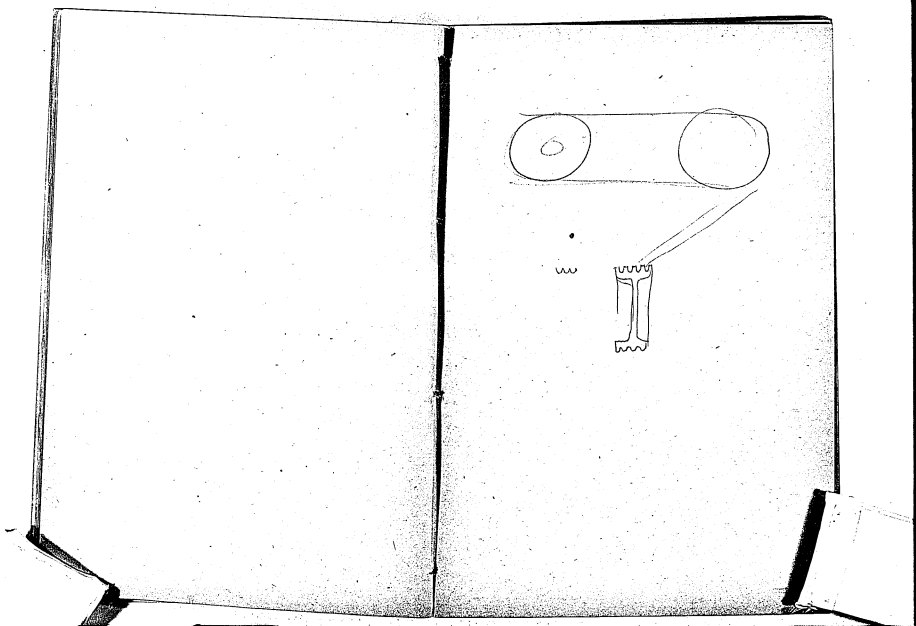
54400 / 272000

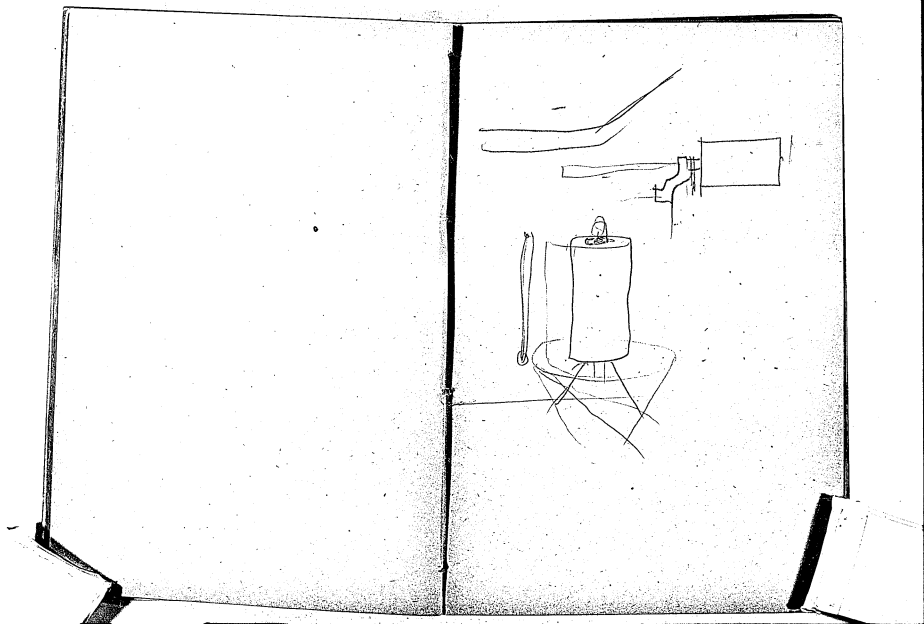
54400
2720 — 1 yr
57120
28560
85680 — 2nd
59976
29988
89964 — 3rd
62974
31487
94461 — 4th
66122

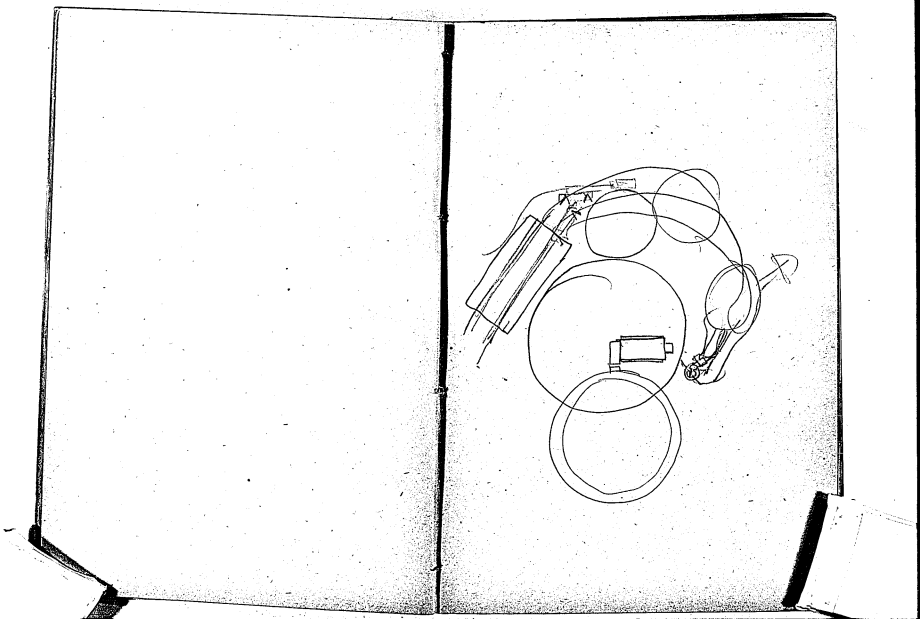


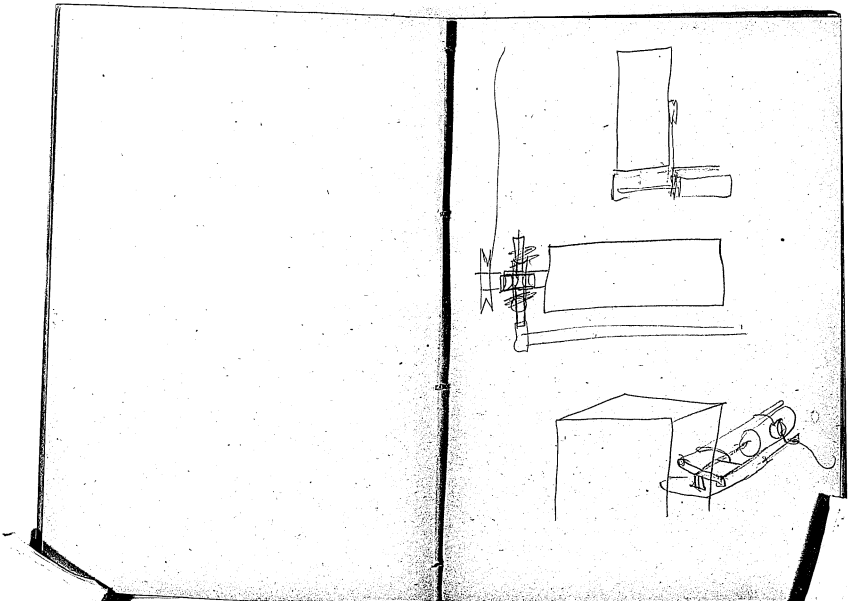
Thumb rheff split.

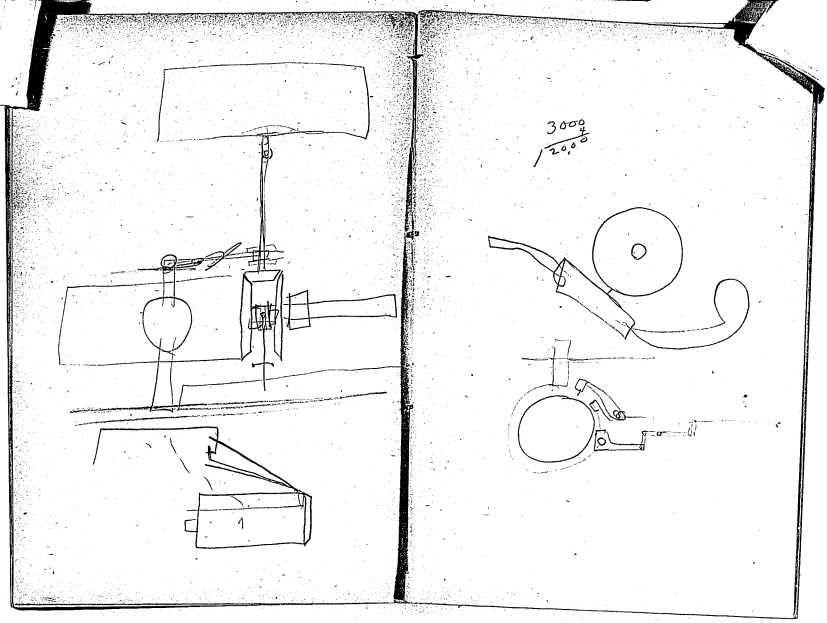


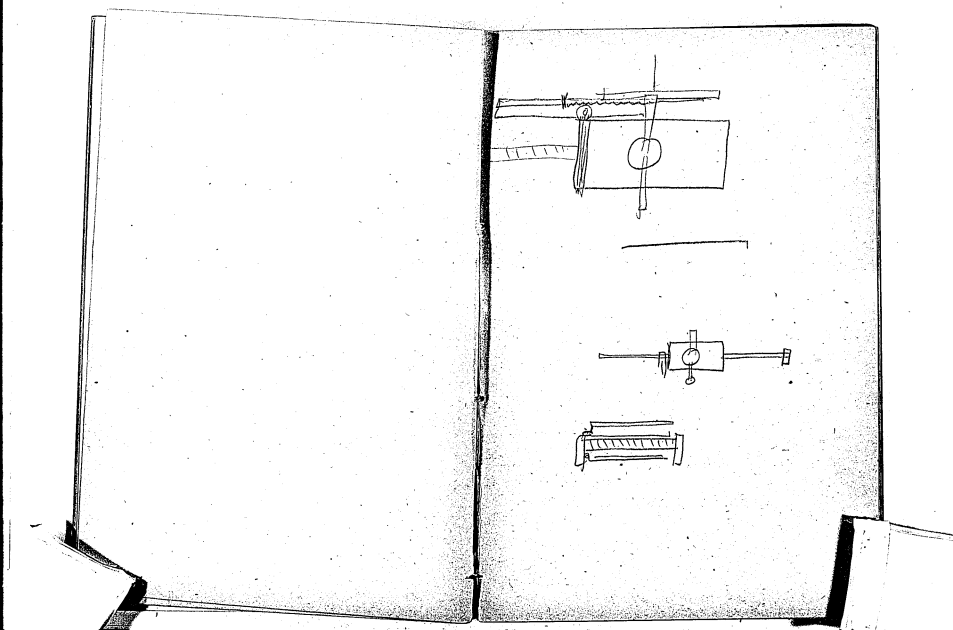


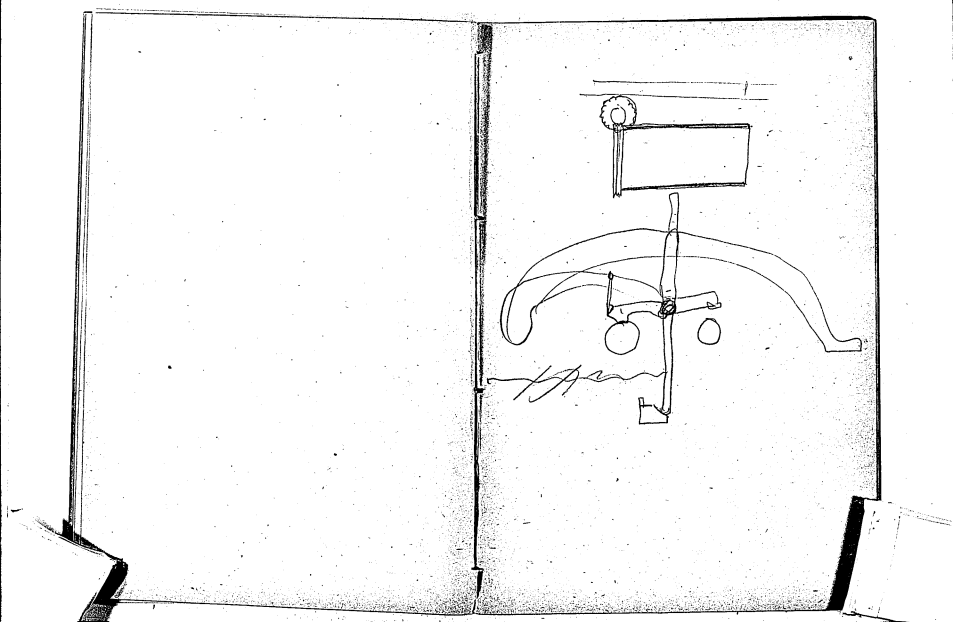


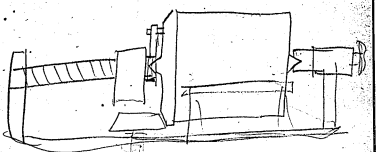


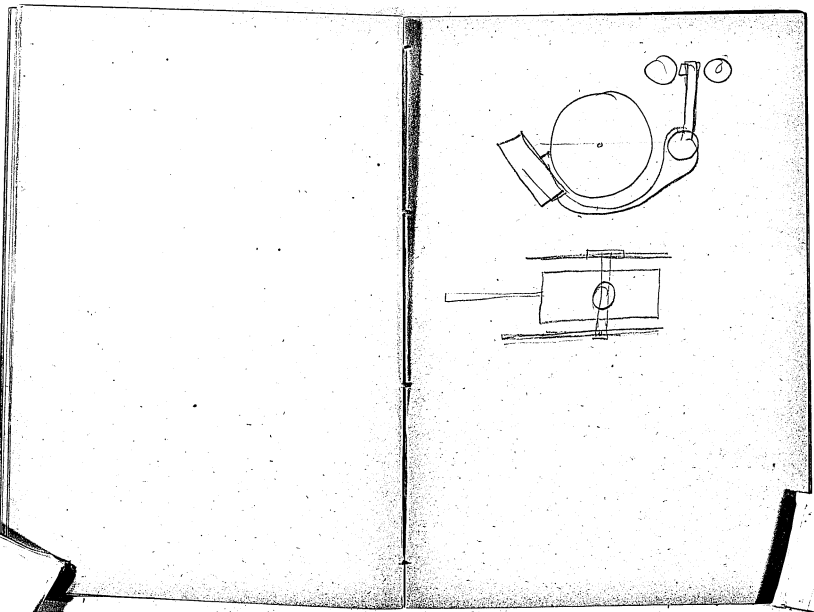


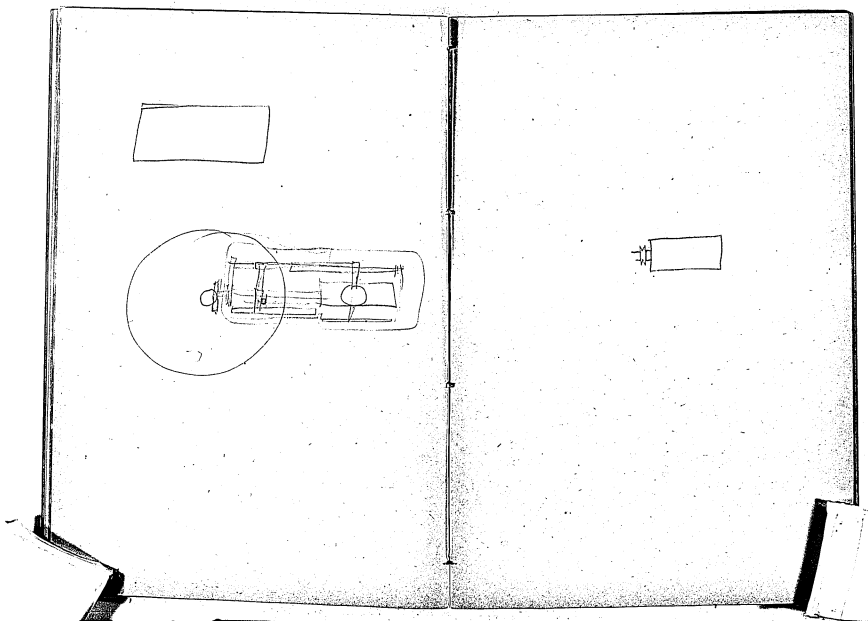

1
3000
2000

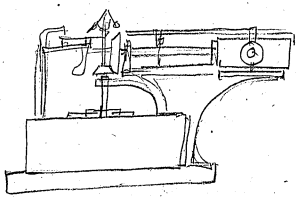


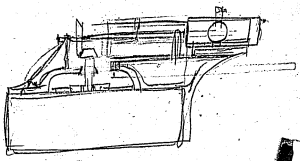


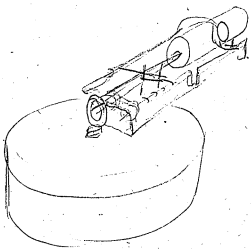


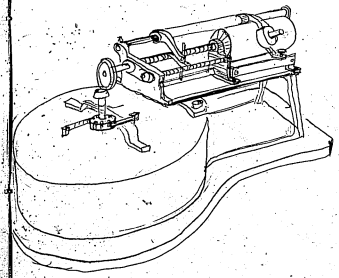


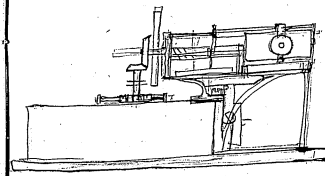


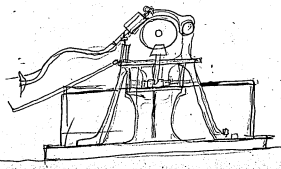


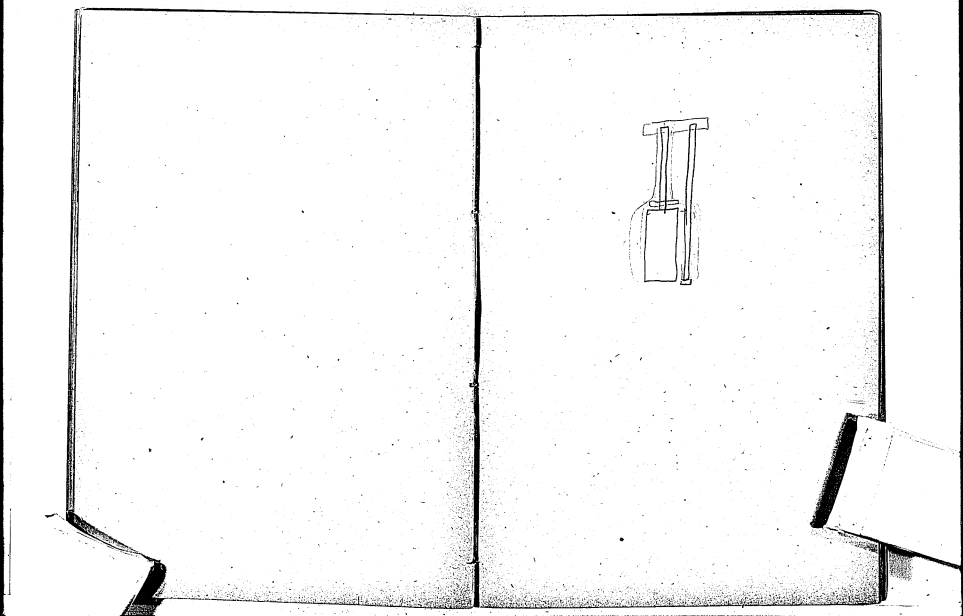


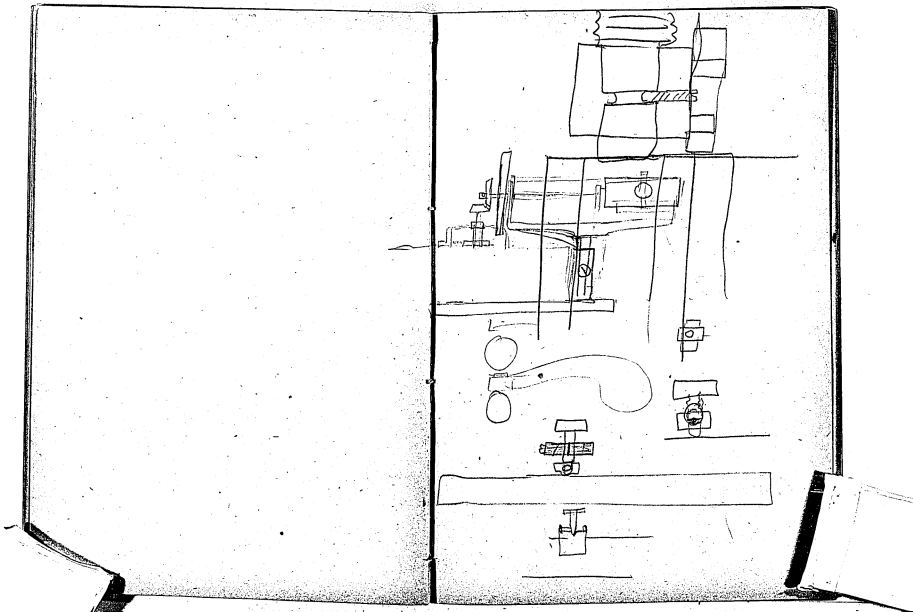


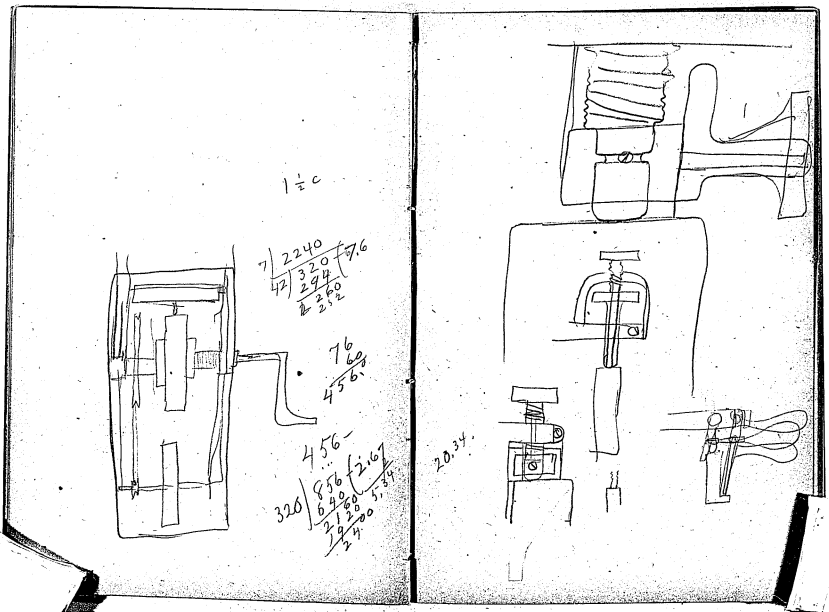








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7 | 2240 | 320
47
294
260
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320 | 856 | 2.67
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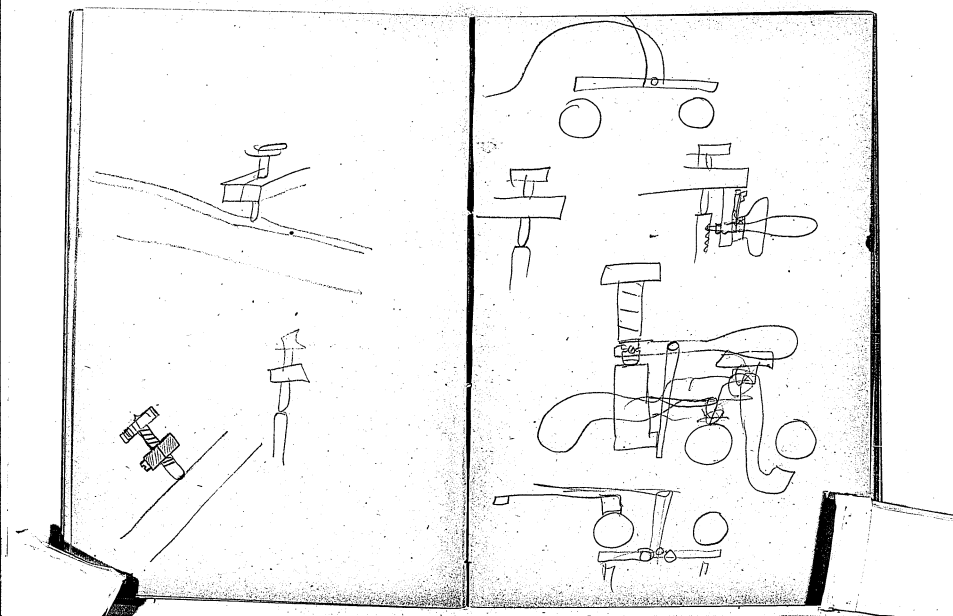
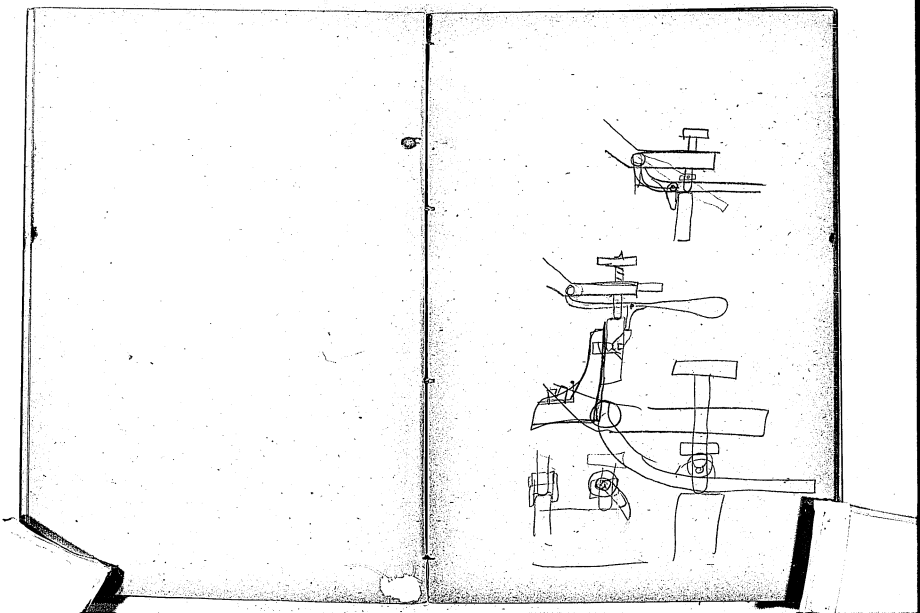
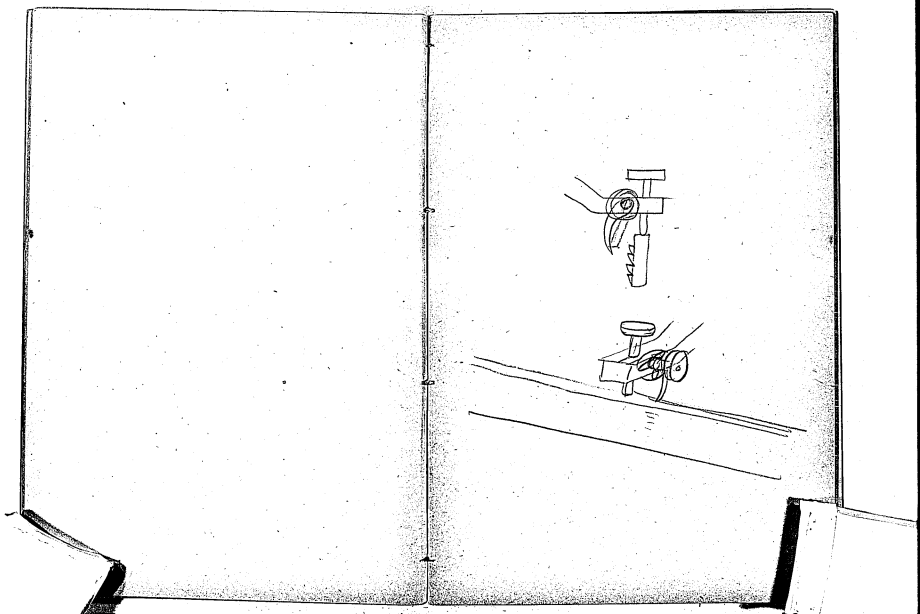
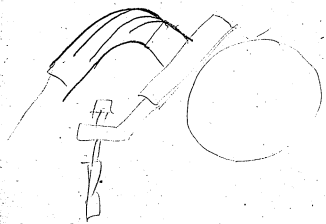
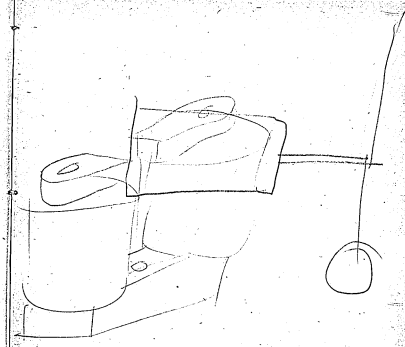




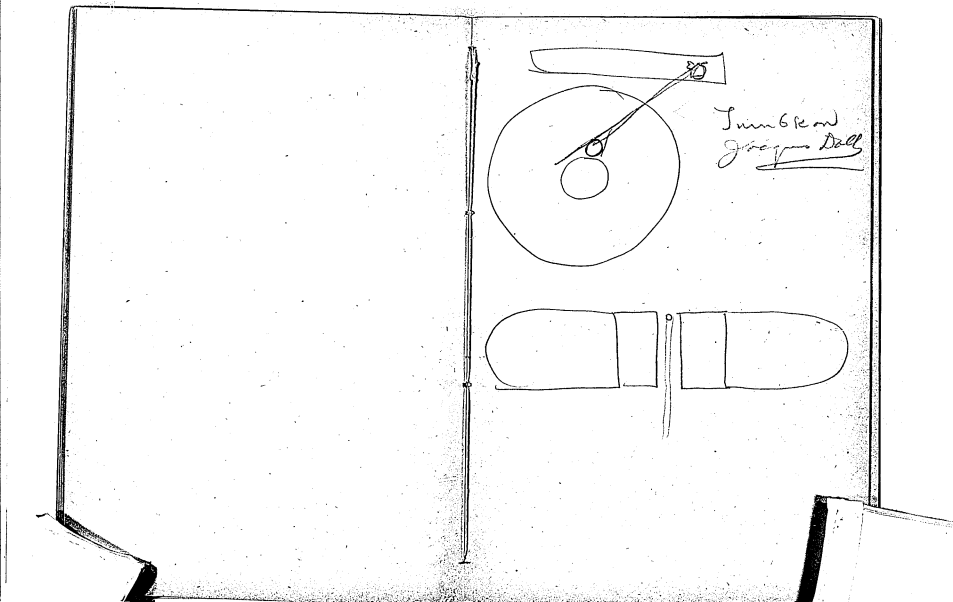


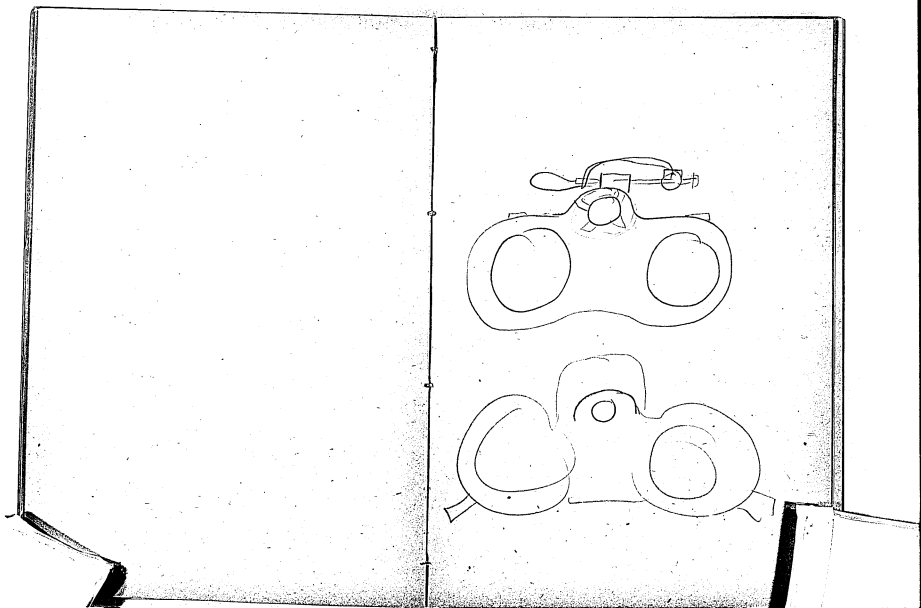
6. 10.

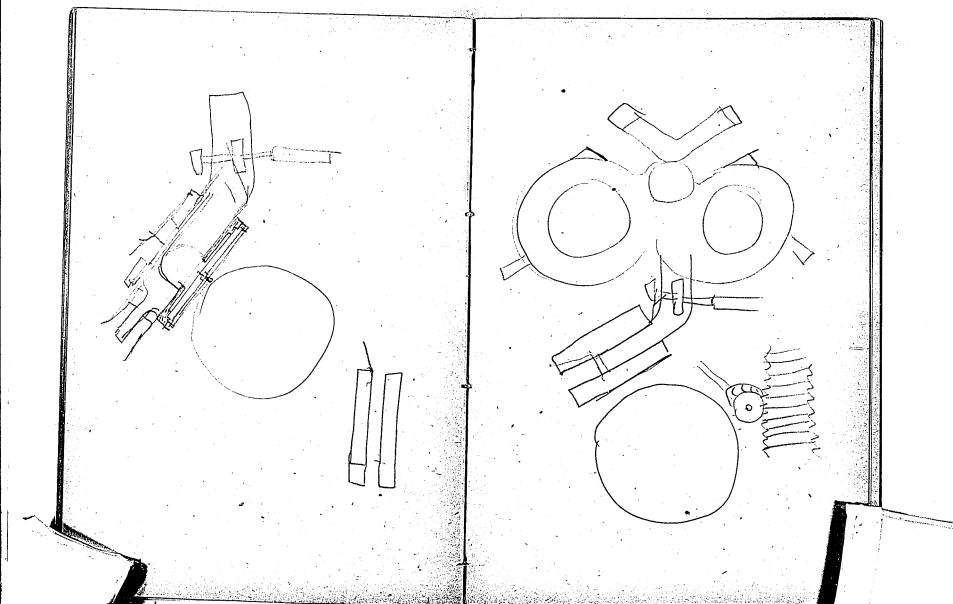


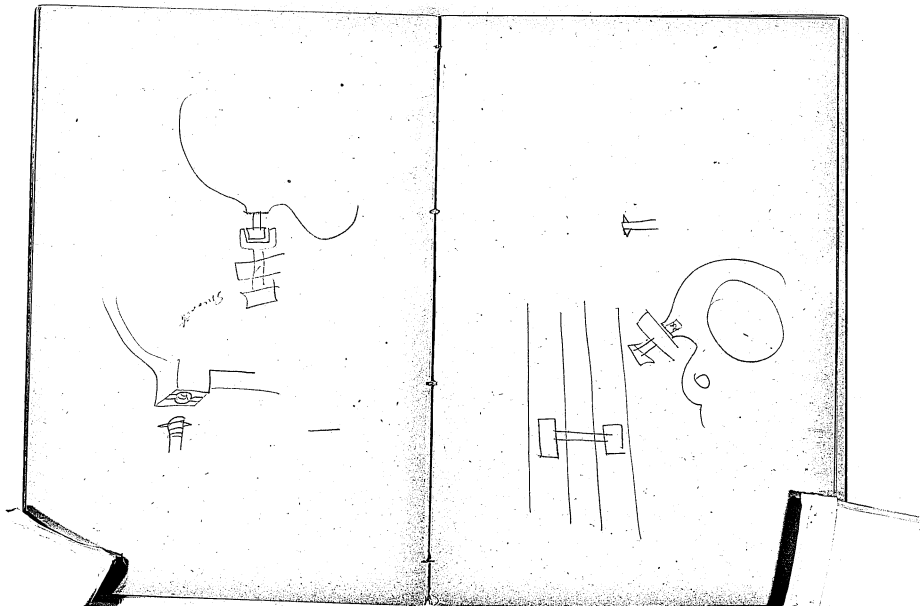


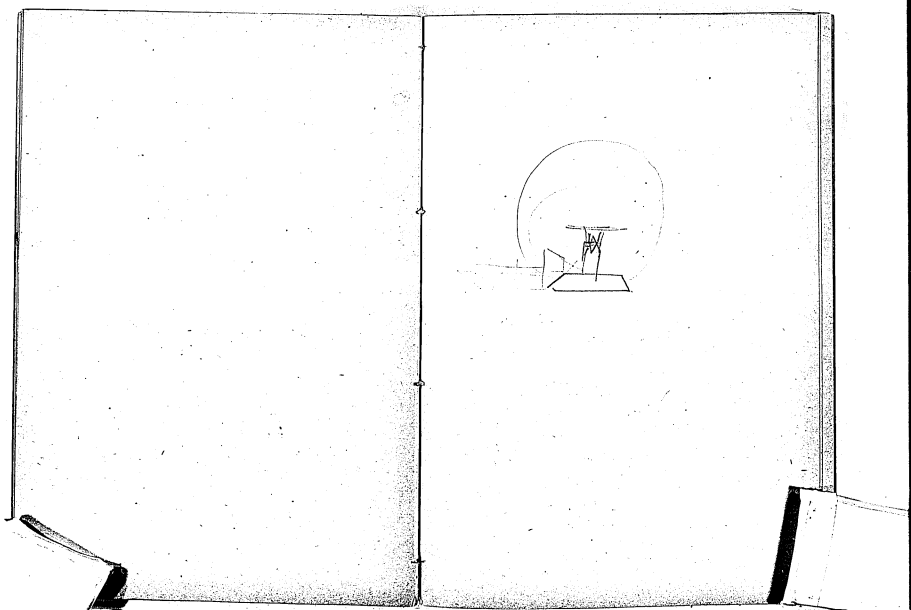
Charge magnets with a constant Current

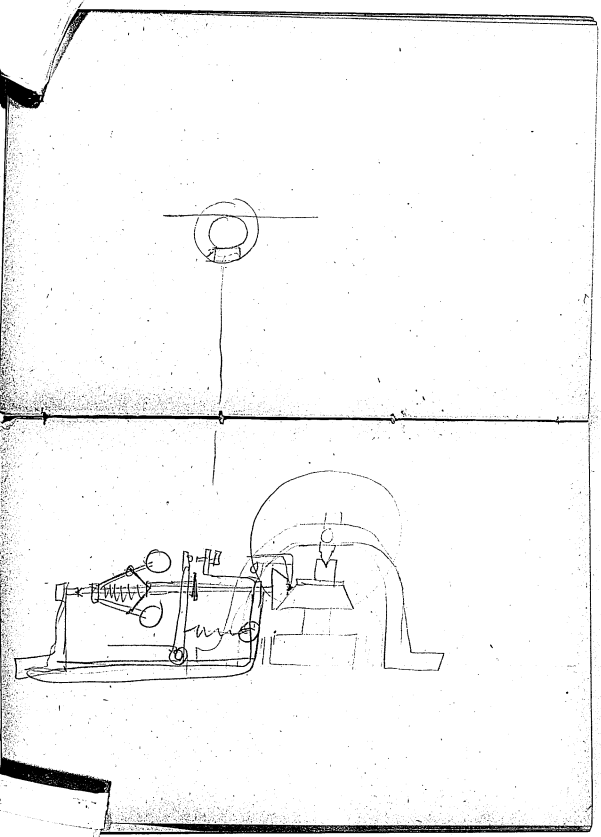


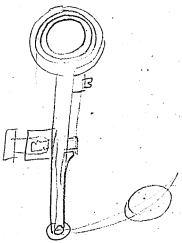


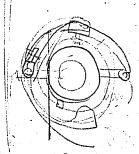


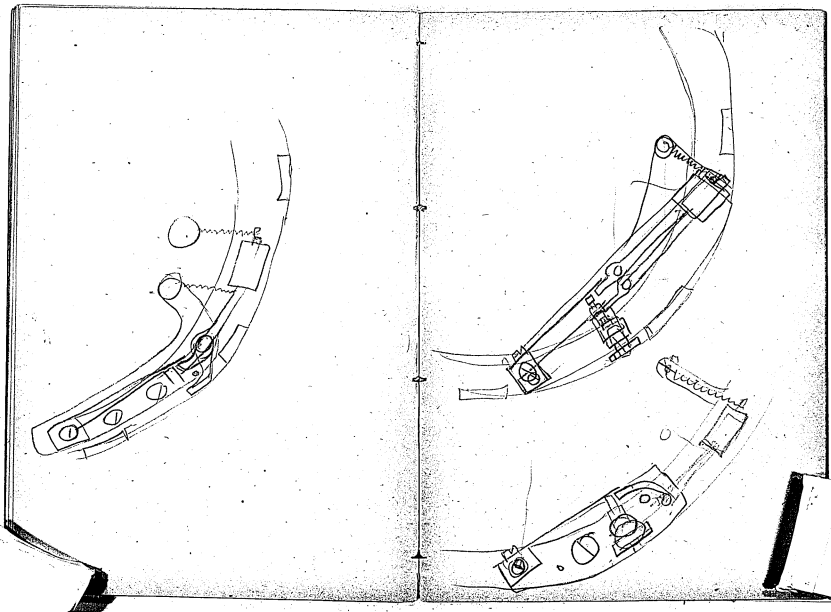


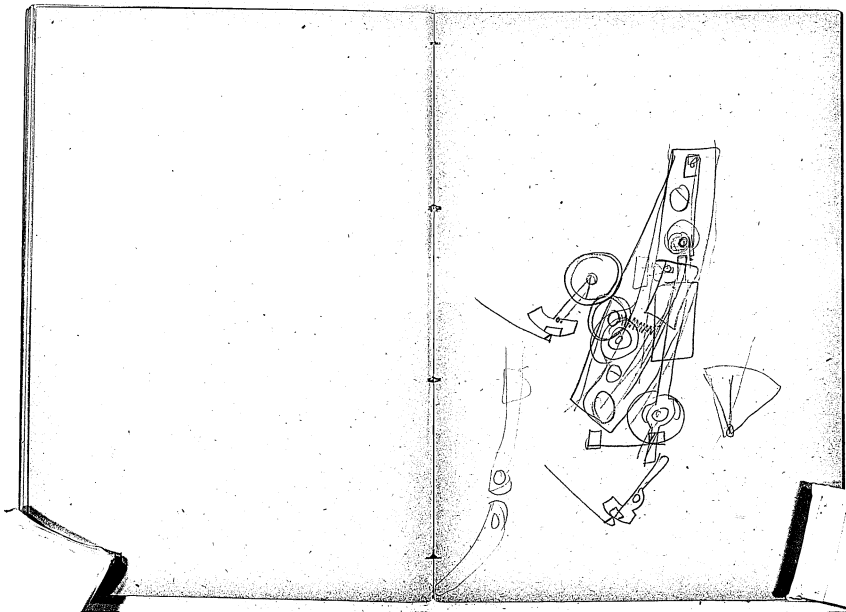


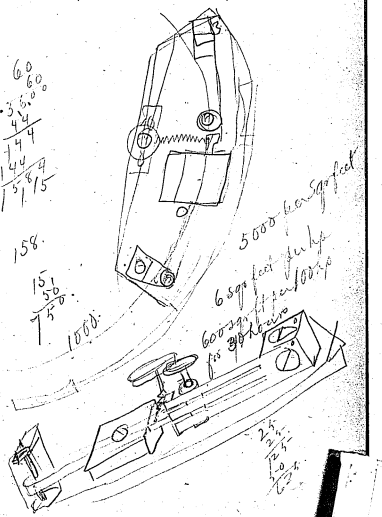


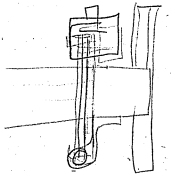


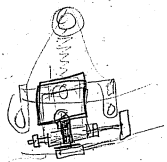


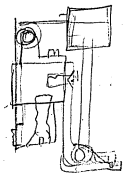


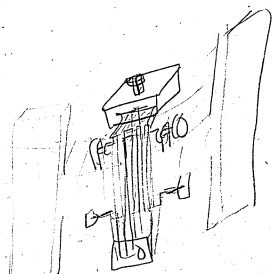


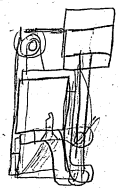

60
60
3600
44
144
144
158
150
1000
5000 lbs per sq foot
65 sq feet per sq ft
600 sq ft
is 39 tons
25
12
5
10

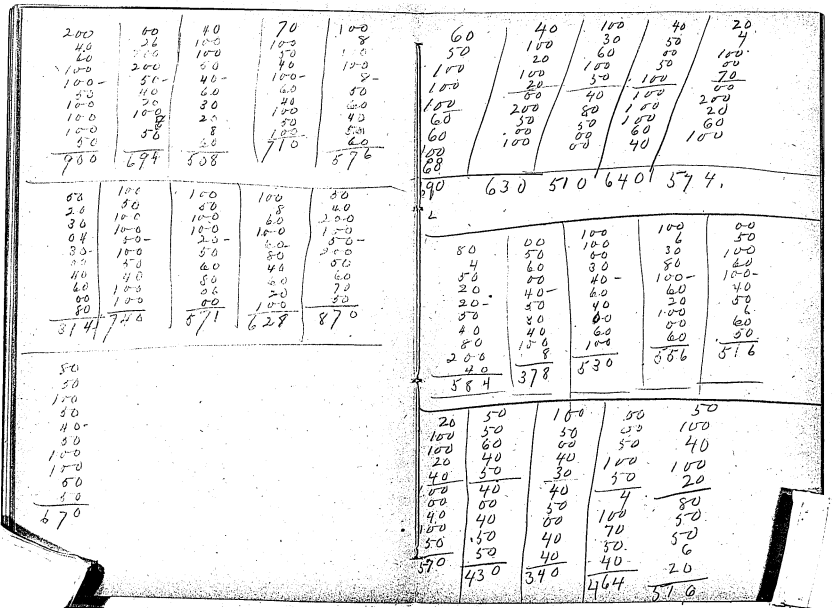


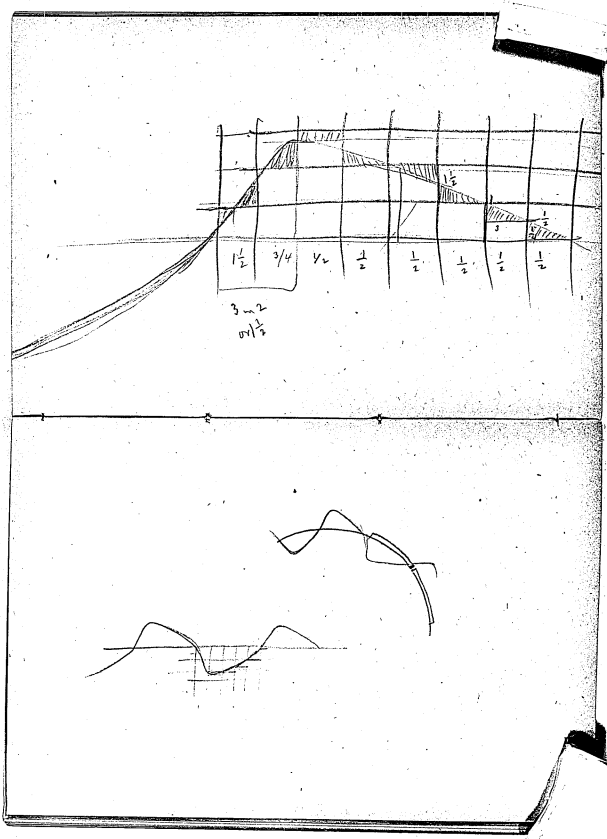


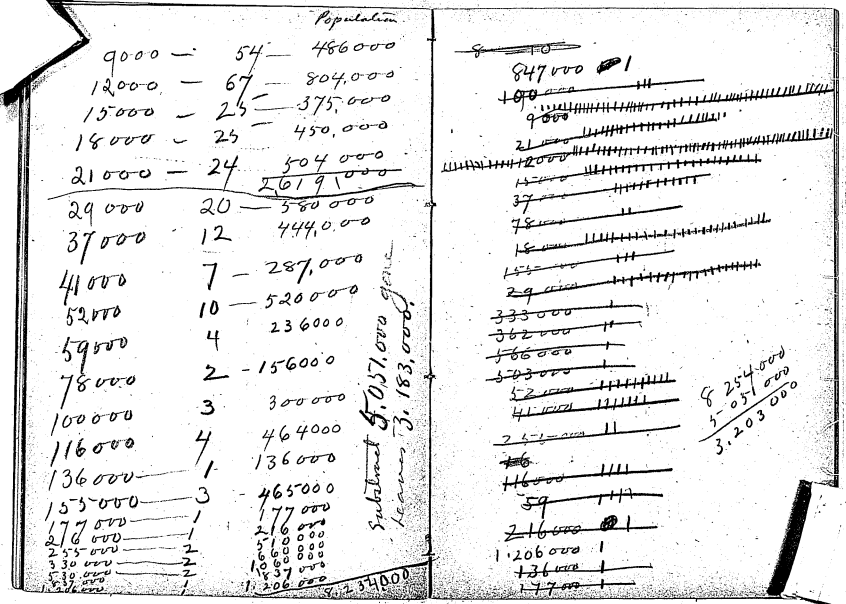



1940






1½
¾
½
½
½
½
½
½
½
½
3 on 2
over ½


Population
9000 — 54 — 486000
12000 — 67 — 804,000
15000 — 25 — 375,000
18000 — 25 — 450,000
21000 — 24 — 504 000
2619 1000
29 000 20 — 580 000
37 000 12 444,0.00
41 000 7 — 287,000
52000 10 — 520000
59000 4 236000
78000 2 — 156000
100000 3 300000
116000 4 464000
136000 1 136000
155000 3 — 465000
177 000 1 177 000
216 000 1 216 000
255 000 2 510000
330 000 2 660000
530 000 2 1060000
1206 000 1 1206 000
Subtract 5,057,000 gives leaves 3,153,000.
847000 1
1206000 1
8 2,54,000
5 — 051 000
3,203 000

29000 × 20 = 580,000

84 × 9000 = 486,000

37000 × 12 = 444,000

67 × 12000 = 804,000

24 × 21000 = 504,000

41000 × 25 = 1,025,000

25 × 18000 = 450,000

21000 × 24 = 504,000

42 × 12 = 504

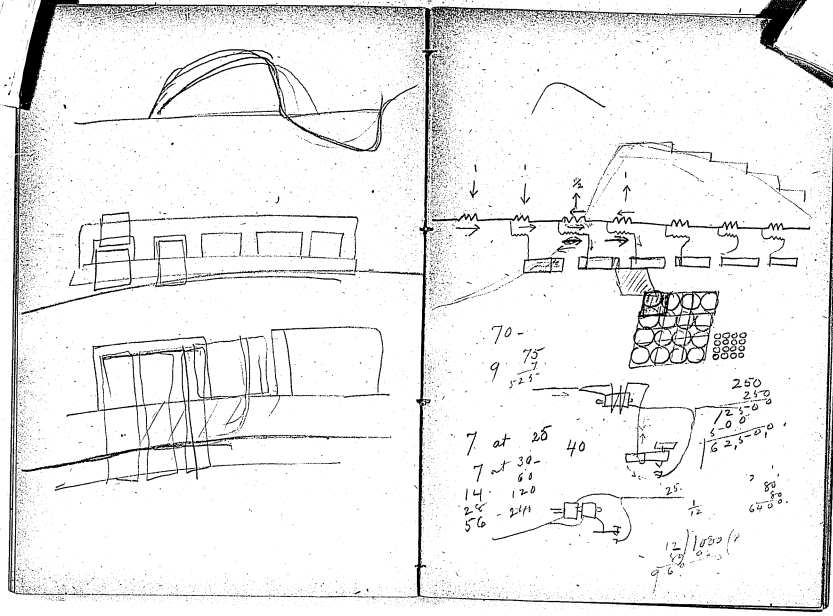
36.36 | 252.252 (7

45 (5

20 | 5000 (250

40 ft.

250


70 -
9 75
7
525
7 at 25
7 at 30 -
14 60
25 120
56 241
40
250
25 0
12 5 0
5 0
6 2,5 0 0
25
1/12
80
6 4 0 0.

70 000
52500
70 000
22 500
51 000
24 500
26 000
35 000
24 000
393 000

555 000
393 000
162 000

75 – Var 21 pc

150.

150.

150
37 Var 300 –

150
37 –

150
18
9

50
5
55 110.

300 – 75 –
150 : 37.

150 pharm.

Total friction – 100
Water source
Variation infection
10.

150
139

Anchoic acid
Anchorates = M.p 110 C
Hard –

Arachidic acid + ates.

Arsenate of lead is hardened.
Cakes together doesn't mix
Irritation

Stannous Arsenate – tinctured with aqueous arsenic acid
Stannic to form gelatinous mass. – Quantitation

Asporetic acid
asparagus gummy

Resin from adding nitric to asphalt oil with Nitric Acid

Benic Benzoles'

Tasteless Glycerine

Will [illegible] in boiling. Stock map with wood fat or asphalts for phono Cylinders

Find make a silk also backing cloth. Varnish with shellacked

get list

Organic bases with which to combine the fatty acids

Camphol is one

Camphic acid & Camphols good

Camphoramic acid & salts

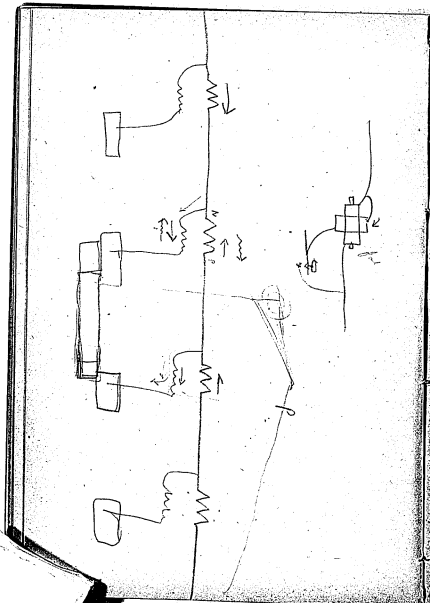
Capric Acid & Caprates

Caprate of Sodium Evaporate Leaves a horny mass without trace of Caprylate

phenol

1888

1 7M — 31 — 35
1 2



Caprone acid & ester, (Palmyra oil)

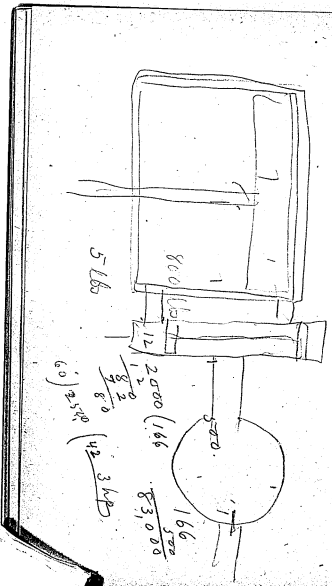
Copyrelliccacid (Palmyra)

Coconut pre-cipitin with lead – test of resultant oil good plano prosty type

100
75
30
205

1500
500
500

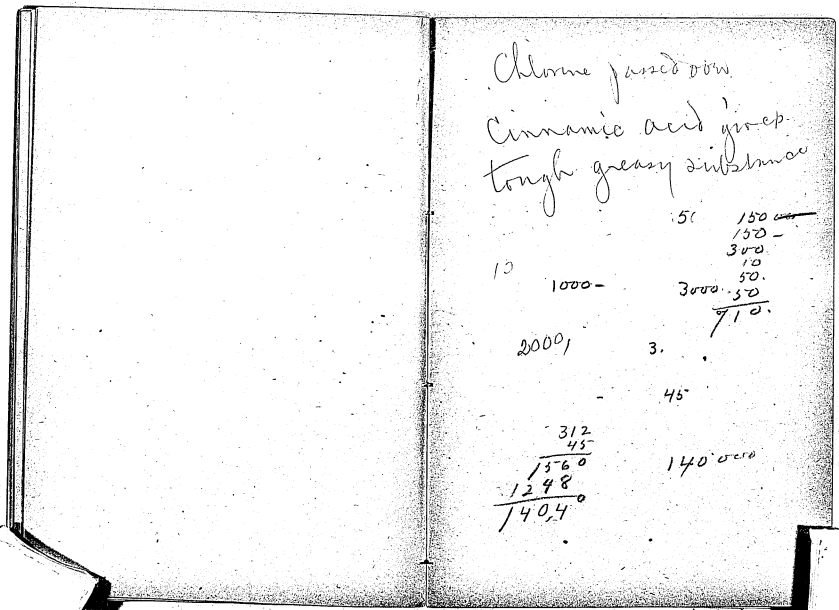
Carmelin blocks
shiny infinitely darker than Carmelt.

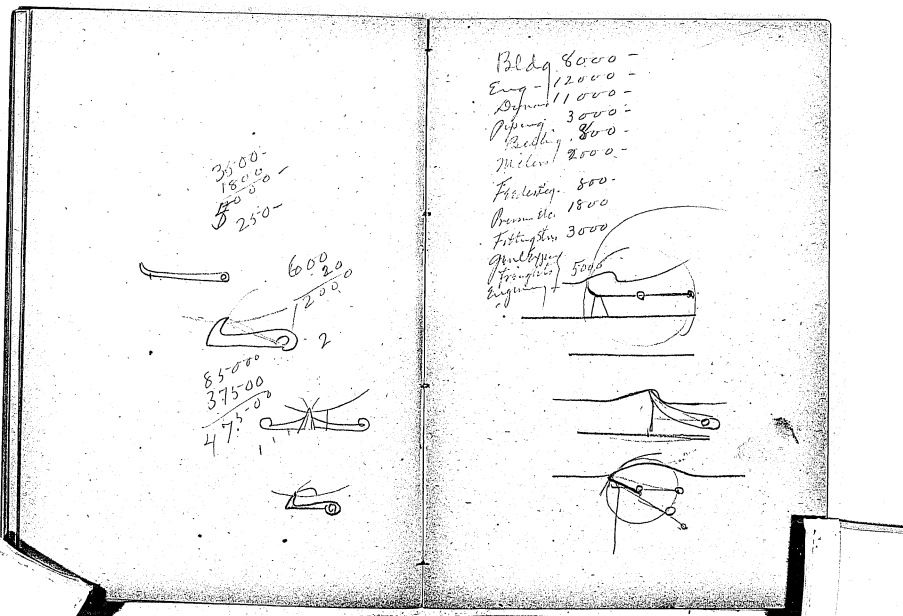



See Art Covered With Reg Vols -

Caseín insolubles is precipitated by all Earthy & Metallic Salts & many Acid Compounds

Melaeinnaniene Transparent Cut with Knife at ordinary temp. but unchanged drawing thumb See Cinnamene Watts


Chlorine passed down
Cinnamic acid gives
tough greasy substance
150
150
300
10
50.
3000 50
710.
2000
3.
45
312
45
1560
1248
14040
140 cc


Bldg. 80000 -
Eng - 12000 -
Dyn 11000 -
Dyeing 3000 -
Bedding 800 -
Millwg 2500 -
Fabricating 800 -
Dressmkg 1800
Fitting Rm 3000
Guildhall
Draughts
Engine
5000
35·00
18·00
25·0-
600
200
200
2
85·000
37500
47·5·00

Recem 9600
Cost. 6155-
~~Profit~~ 3445 =

8000.
3200 -
60

Recem 19200
4632
11568

Coal 600
873
1477 -
657
2124

9600
3
28800
9756
19044
18200

6155-
1477
7632
2124
9756

1600 lt -

8.50
30
705.00

Manager - 2000 -
Engineer - 1200 -
Fireman - 657
Meter Man/Clerk - 600
Repairman - 650 -
Boy 250
4557 -
725
873 50
6155-

15-
12
50
15-0
18 30

365-
180
2920
36 5-
6570

9600 -

890 105 110 125 -
1

500 450 4

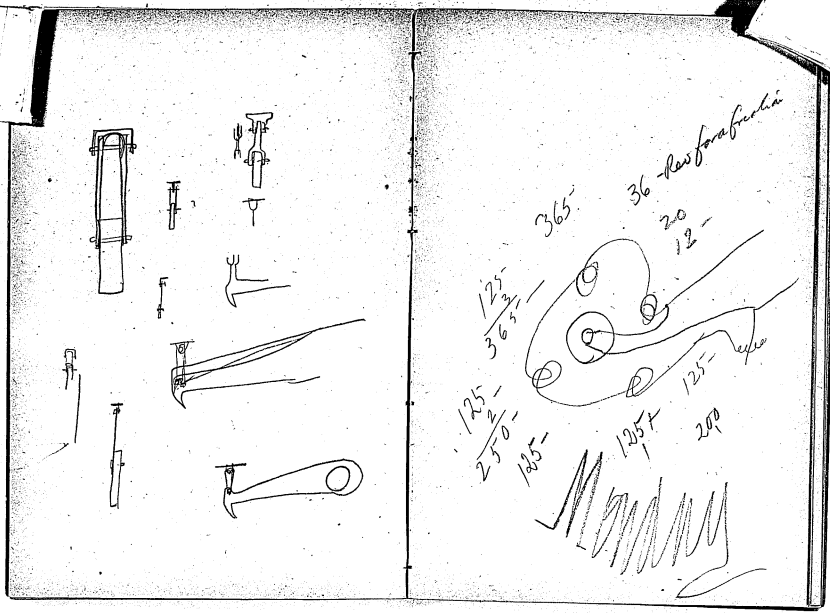
312
280
24960
624
87360

312
2
624 -

125-
29
875
250
143 75 -
8 2

700/4800 - 1600
900

Goods. Coal


36 - das fora furadas
365
20
12
125
3
365
125
2
250
125
125
125
200

Tribromobenzenesulphonic acids

The amide $C_6H_2Br_3SO_2NH_2$ separates from aqueous sol'n powder slightly sol hot water. Blackens without melting at 210 @ 220 and carbonizes at higher temperature giving off white Jacobsmate Watts Pt 1st 3rd Sup page 241 —

---

The amide - $C_6H_2Br_3SO_2NH_2$

Turns brown 220 volatilizes with decomposition at 228

Watts Pt 1 3rd Sup p 242

---

Pentabromobenzenesulphonic acid

~~Chloride $C_6Br_5SO_2Cl$~~ The amide $C_6Br_5SO_2NH_2$ deposited from Hot water as crystalline powder Soluable Alcohol Pt blackens without melting at 250° C

Pt 1st 3rd Sup Watts p 244

Nitrodibromobenzenesulphonic acid
acid blackens at 100 without melting
Pt I 3rd Sup Watts p 245

---

Benzenesulphonic acids
– Contn. Several
$NO_2$ Br Br Br. blackens. See Table
– Pt I 3rd Sup p 257

---

Nitrobromobenzenedisulphonic acid
~~forms~~ Uncrystalizable salts with
Ammonia Barium & Lead
Pt Watts 3rd Sup p 258

See 5th line from bottom page
258

Diazoxybenzoic acid

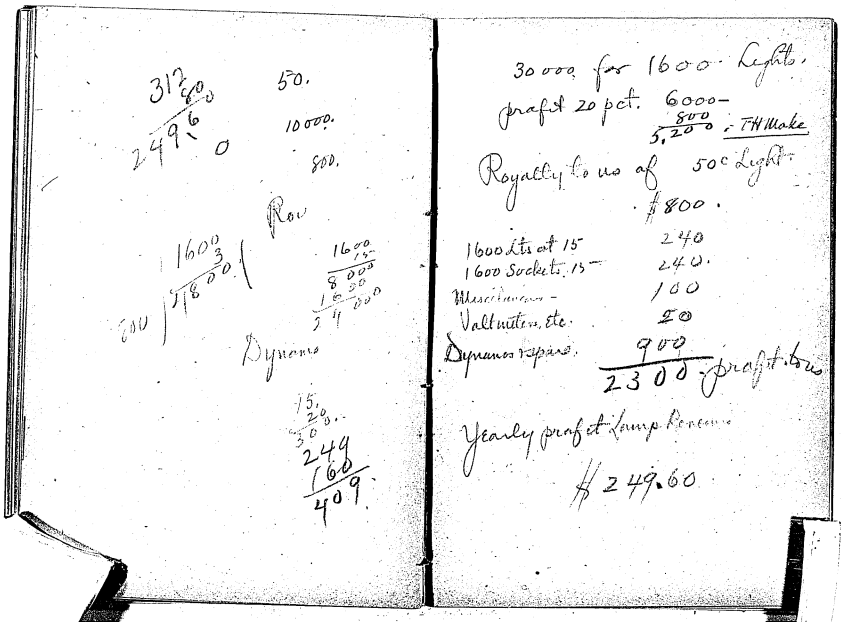
Ammonium salt dries upon Evaporation to a brown transparent Varnish

Barium salt very peculiar is Electric jumps in Gavia for hours

Pt 1 3rd Dup 278 –

---

Salycylic acid added to glue makes it more tenacious



312 60
249 6 0

50.
10000.
800.

Rev

1600 | 3 | 1800.
800

1600 15
8000
1600
24000

Dynamo

15.
20.
30
249
160
409

30 000 for 1600 Lights.
profit 20 pct. 6000-
800
5,200 - TH Make

Royalty to us of 50c Light
$800.

| | |
|---|---|
| 1600 Lts at 15 | 240 |
| 1600 Sockets 15 — | 240. |
| Miscellaneous — | 100 |
| Valuation, etc. | 20 |
| Dynamo repairs. | 900 |
| | 2300 - profit 600 |

Yearly profit Lamp Renewals
$249.60

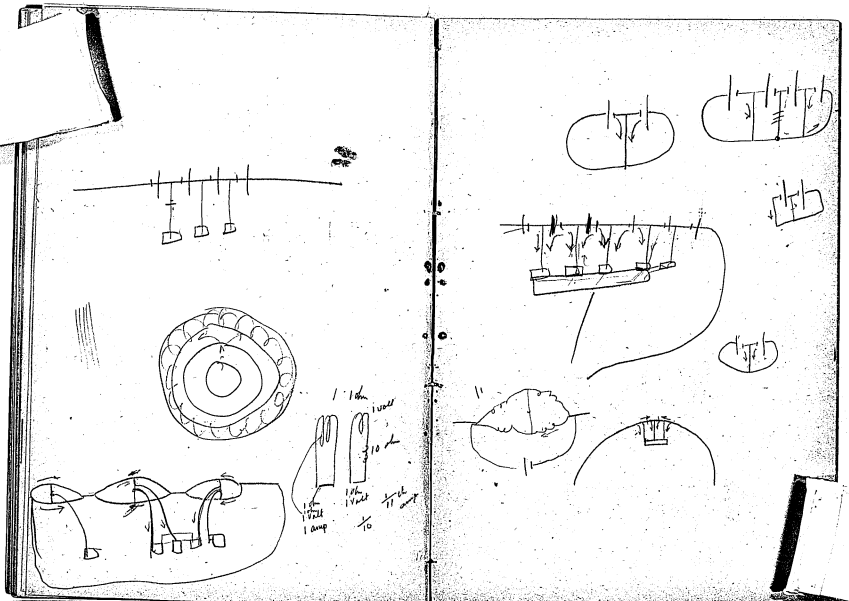
We adopt TH are sell where we can getting ~~Lamps to~~ They taking profit They sell him Incandescents we taking profit —

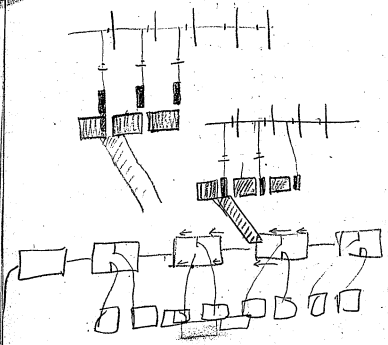
all Lamp renewals come to us ~~as new bog~~ ~~on all bog~~ already done ~~TH buy Lamps from us at 55 cents, to supply Incandescents to~~ turn over to us all their Isolated Lamp renewals and buy all Lamp from us for their ~~new~~ Cubical stations at 50 cents ~~and on all new Stations Stations needed new deal 40 cents, we not to sell Small~~

1600 / 4800 3

150

317 / 150 / 1560 / 1560 / 3120 / 4680 1





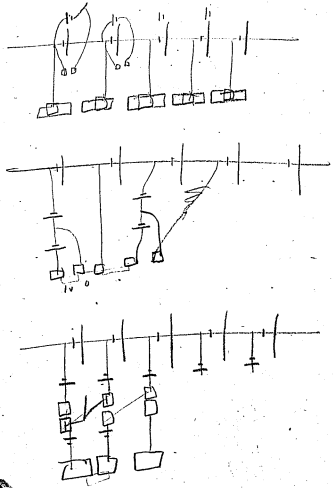
580,000
444 000
287 000
520 000
236 000
156 000
300 000
464 000
136 000
465 000
177 000
216 000
510 000
660 000
1,060 000
837 000
1,206 000

8,254,000
2 619 000
10873 000
5051 000
5822 000

5822000
2619000
3,203

2¢

676



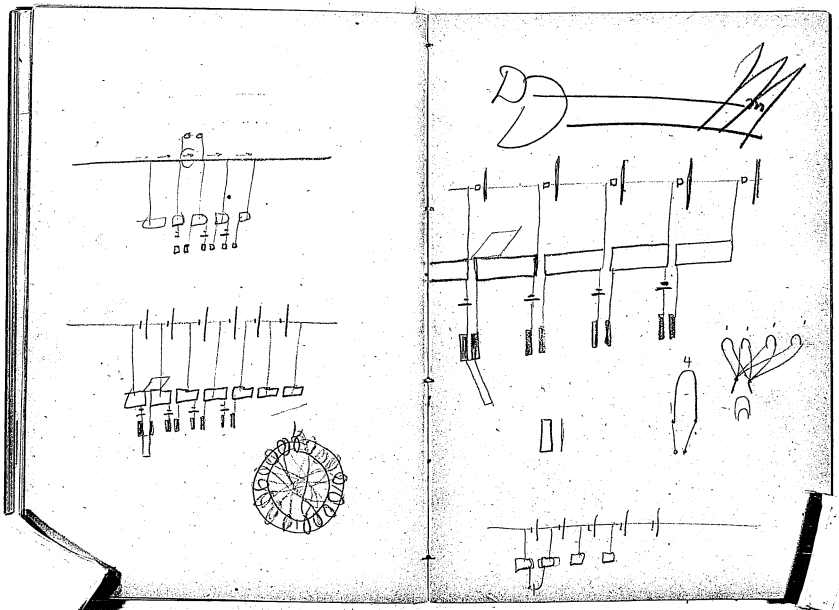
51 000
1,206,000
90 000
362 000
566 000
503 000
255 000
51 000
116 000
27 000
48 000
32 000
30 000
55 000
39 000
25 000
46 000
216 000
26 000
847 000
89 000
43 000
41 000
4,764 000

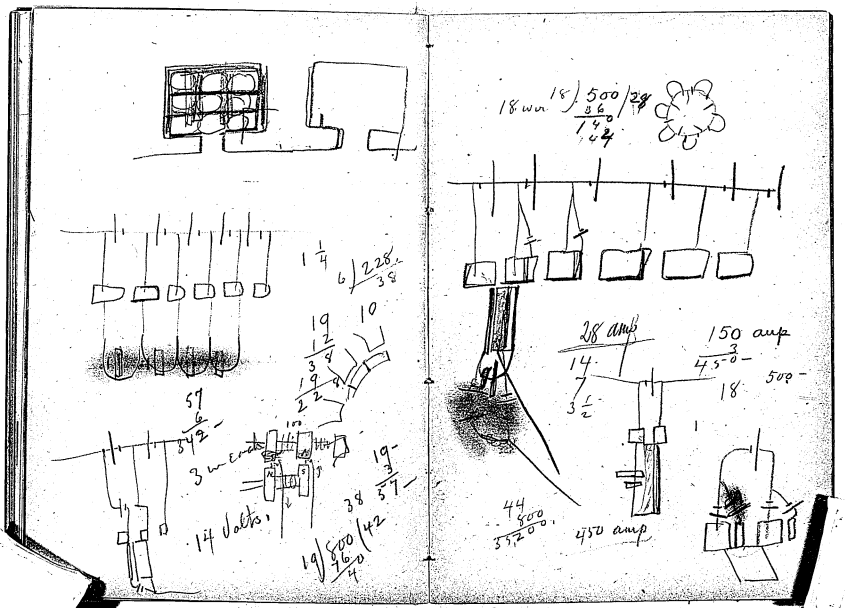
45 000
42 000
177 000
23 000
287 000

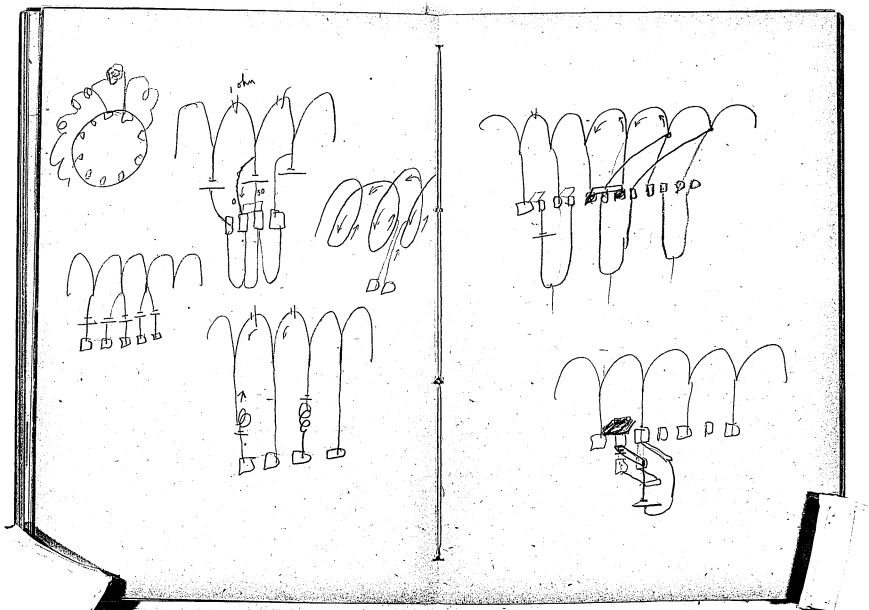
8,234 000
5,051 000
3,183 000

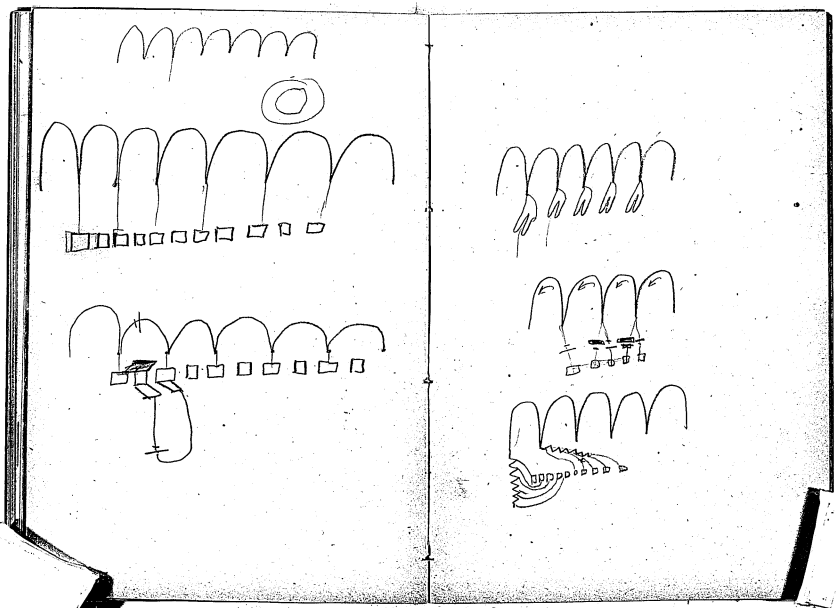
4,764 000
287 000
5,051 000

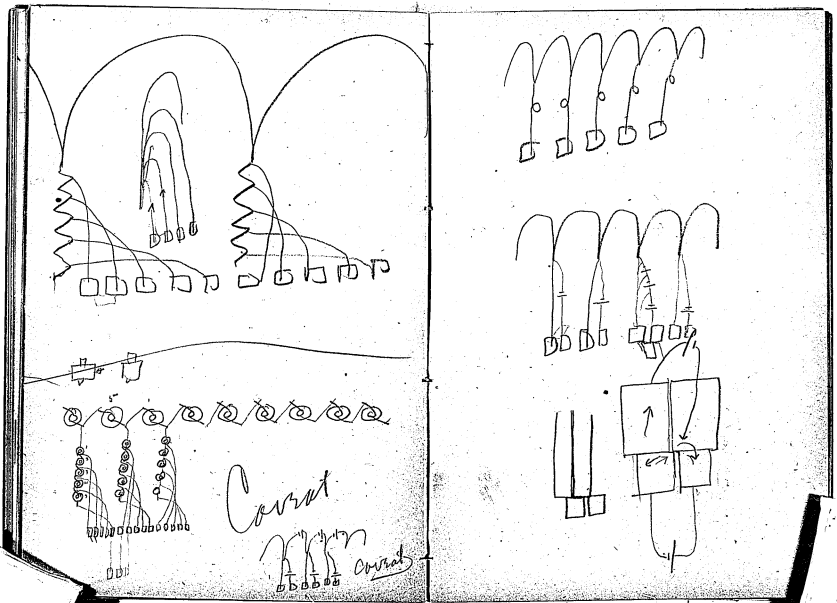
9 10

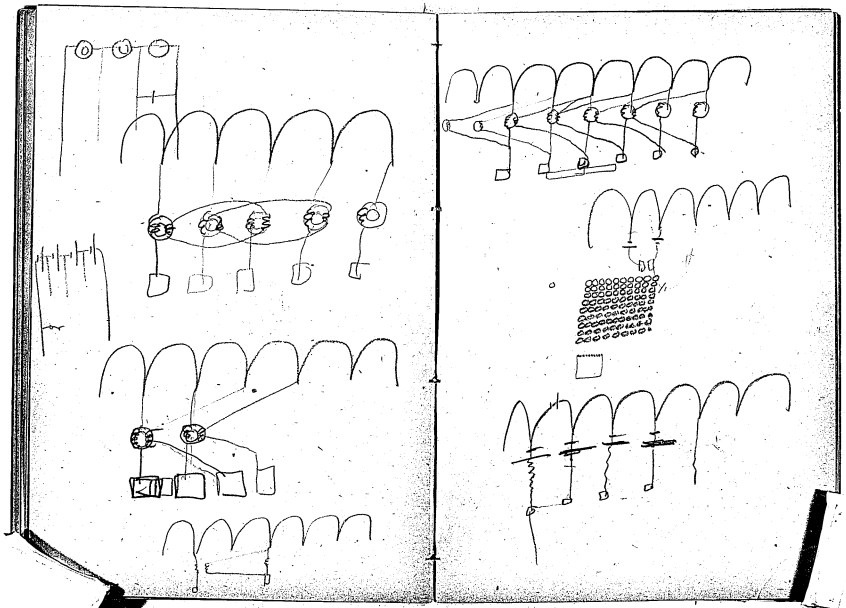


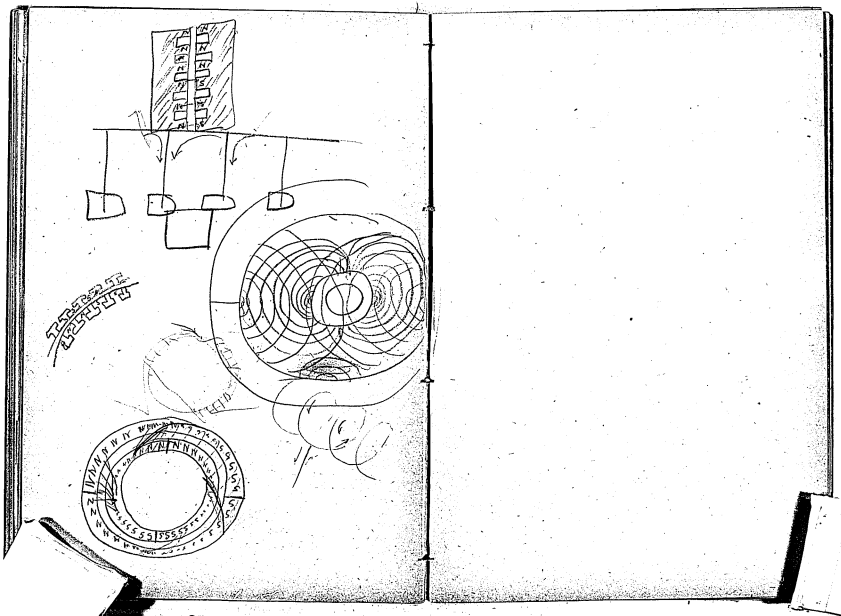

18 wm
1 1/4
6
10
19
57
3 wire
14 Volts,
38
19
44
450 amp
28 amp
150 amp
14
18
500

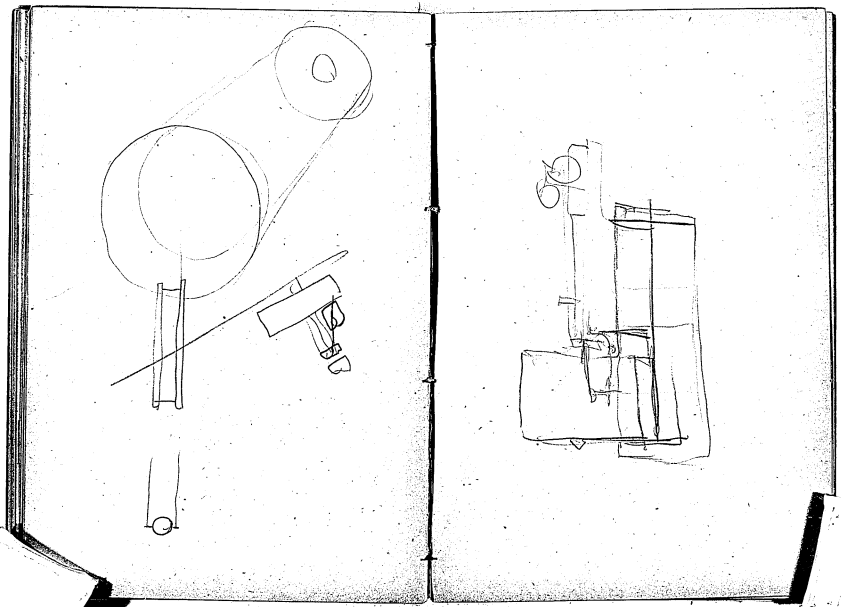


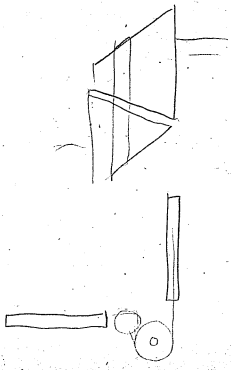



Courat
Courat

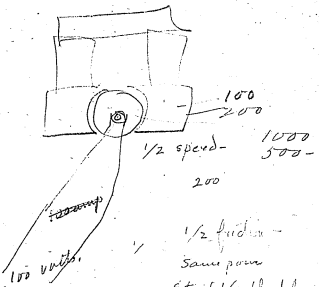








2 Volts – 2 ohms – 1
1 – 2
½ – 4



3 pct. 1.8 pct

1 y. 4000. 1st $72
2 8000 " 144
3 12.000 " 312
16000

2040.

72
17
504
72
1224.

240 160
72

6

120 1650 180
240 1800
360 1920
480 2040
600 1848
720 10
840
960
1080
1200
1320
1440

120 120 240
11 72
120 120 312
120 132
14

120 120
13 36
360 120
120 156
156

127000 - 40.000.

13.000. 1⅓ pct.

68000
27000
41.000
34
7
6

17 | 127000 - (24
102
25
17
8

120
72
72
264

192

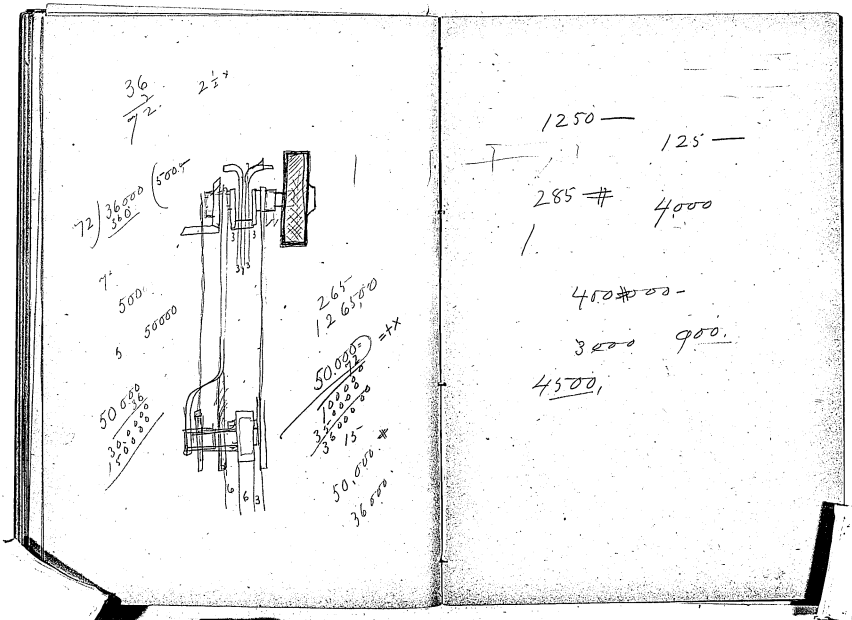
10 years

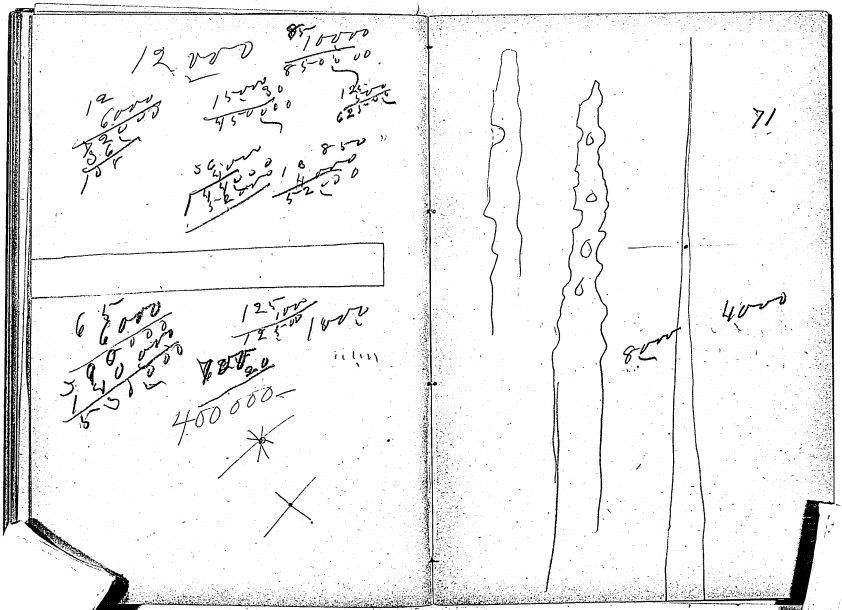
1000 - 3 17
1000 6 14
1000 9 21
1000 12 3 3pct

4 | 7.2
1.8. 1st yr

120 120 120
17 13 84
84 120 120
1680 600 1680
120 120
18 18

1.80


36
72
2½
72 | 36000
500
7
500
50000
50,000
30,000
15,000
265
126,500
50,000
70,000
35,000
15
50,000
36,000
1250
125
285 # 4000
450,000
3000 900
4500



71
40000
284000

4000 B

24 8000 - m
208000

on 1500 Grinders
on 2500 Mowers

6000 B -
6000 m -

284000
208.000
492,000 net
106 500
50 000
648,500
72 000
24 5000
744,500
225-00
150-00
375-00
3

Stockton 1500 B - Labor 15 - Mat 40 - Cost 15
" 2500 m - 6 Stock - 12 - 6

22500
15000
37500

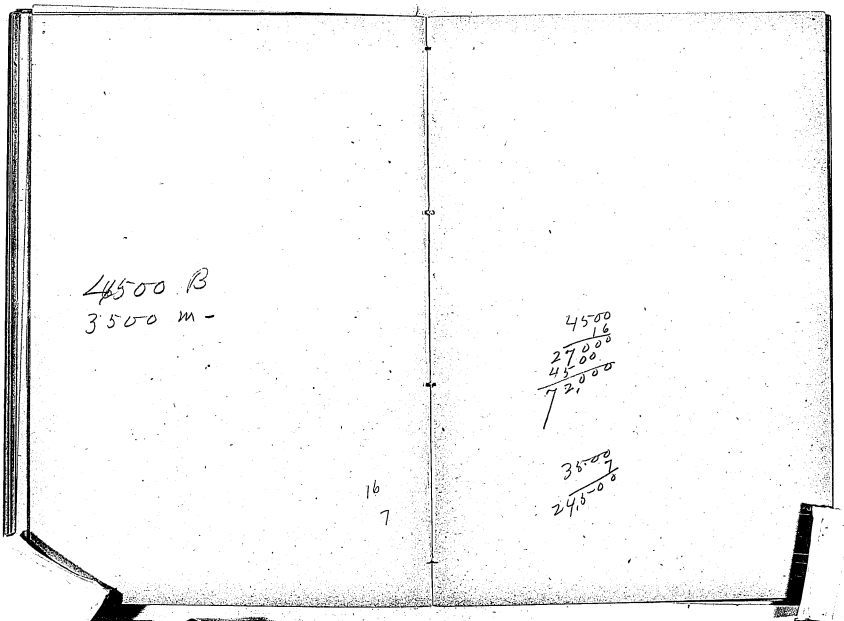
25-00
26
15000
5000
65000
1500 15000
15
7500
3000
15-00
225-00

2500
1500

1500
15
1500
105-00
106.500

15-00
15
7500
1500 ) 22500 ( 15
15000
7500
3

25-00
6
2500 ) 150000 (
15000


45500 B
3500 m -
4500
16
27000
43000
72000
7
16
7
3500
7
24500

[EN-88-11-02]

China Clay-
Terra alba.
Alabaster slabs
Grahamite a solid hydrocarbon found
plentifully in U.S. W Va, etc. allied to
Asphalt, jet,

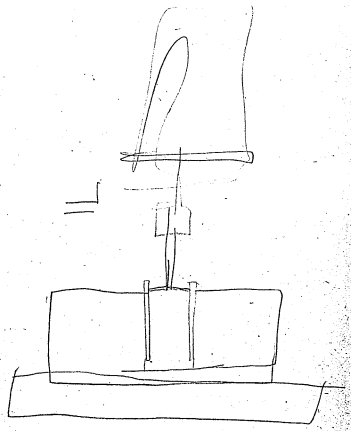
Does $H_2O$ is not decomposed Except
by interposition of some dissolved
Compound Try Chlorsulphur or
some Electrolytic Compound dissolved
in Bisulphide Carbon
So as to get a deposit of Carbon
by direct Electrolysis

As there is great deal gases
dissolved in iron Copper
heat same in Vacuo continuing
Hydrogen to reduce the O to
$H_2O$ + absorb $H_2O$ by Phos Anhy

~~Probably~~

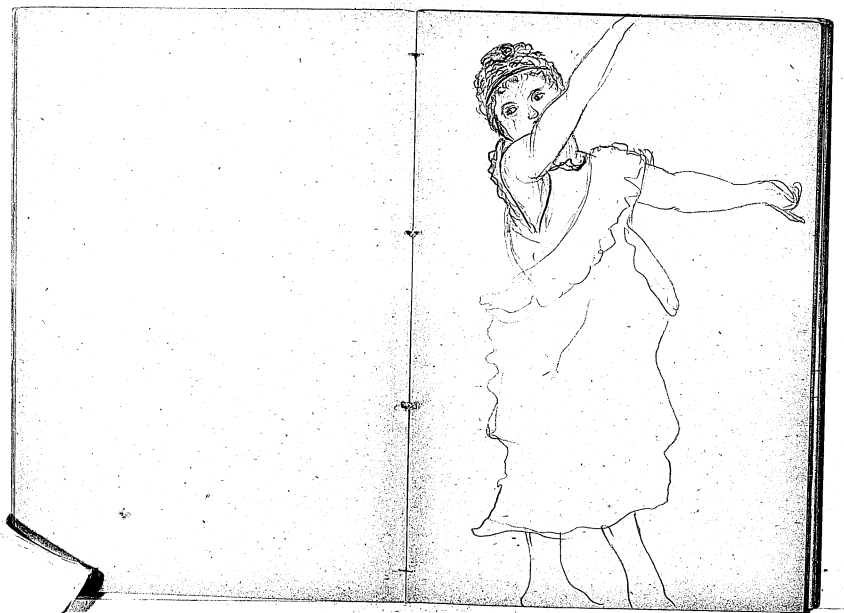
Why was piano forte steel decarbonized in Vacuo if its hardness is due to Carbon perhaps the Carbon merely Causes it to solidify in a peculiar way - Carry these Experiments further + determine if this can be done on large scale —

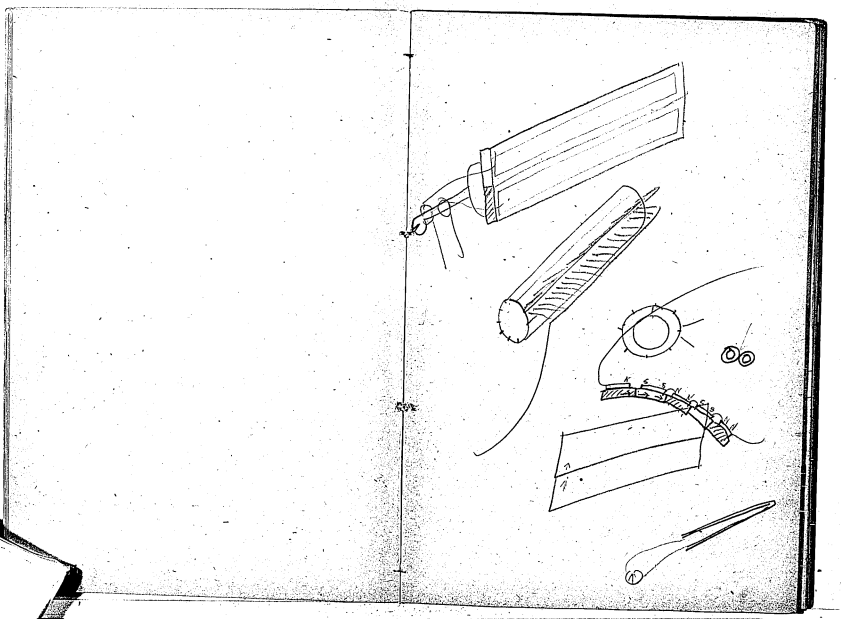
Get some CP Acetone + Squirt in file. This dont react & think + will make an easy working stuff - ordinary Acetylene ng contains Hydrogen

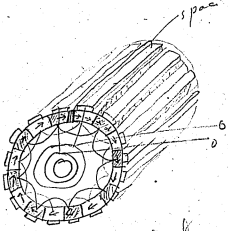


Tryosone softening Material oil balsam etc
with Carnauba Above.

Heat gauntlet of Hardrubber
& its opposite by Amber
Sealing Wax, etc & their
use ~~as~~ Collectors not
touching, The necessity of
two dissimilar materials
proves the Rubbing E is
of Thermoelectric Origin





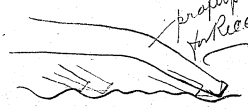


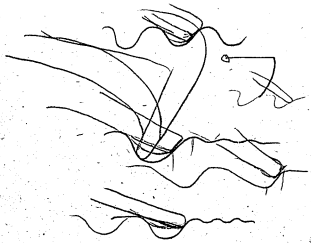

Radiant Heat

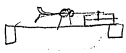
Bleide Vulcanite for P-smo alter
drastadine (which) for N-
focal air top with Metal
principle Hydrodimic that
junction of 2 Levulol
by passing Electricity about
Gelatin by thermo radium
plate is fractions

Nov 2 1888

Thanough

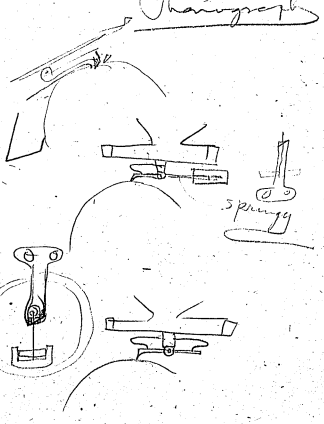


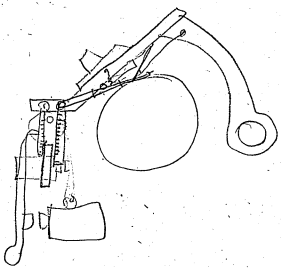


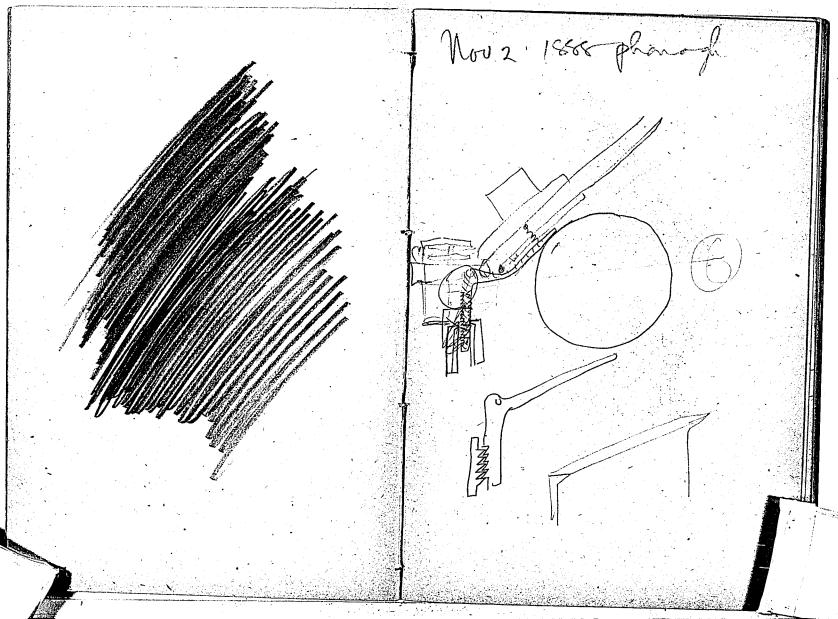
Nov 2 1888

Phaireograph



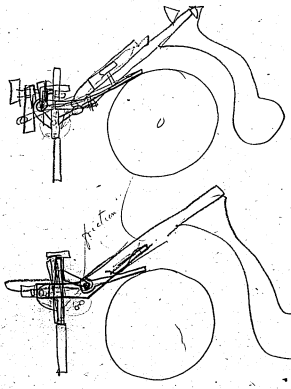
Nov 2 1886 Jhaugh

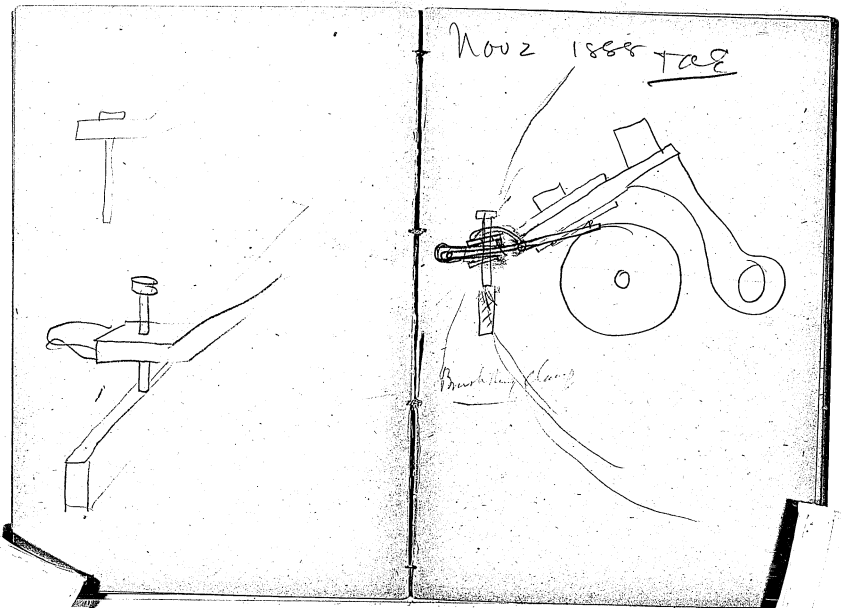


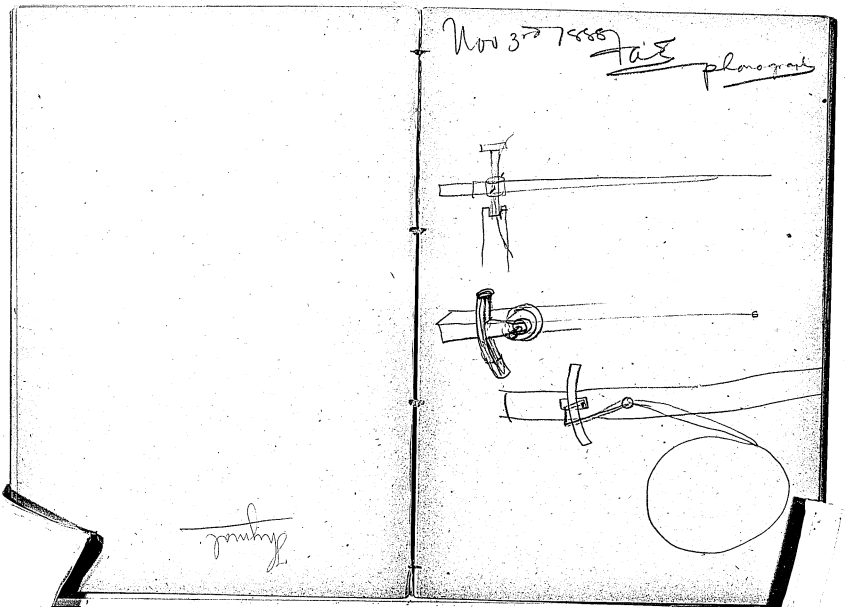

Nov 2 · 1888 photograph

Nov 2-88

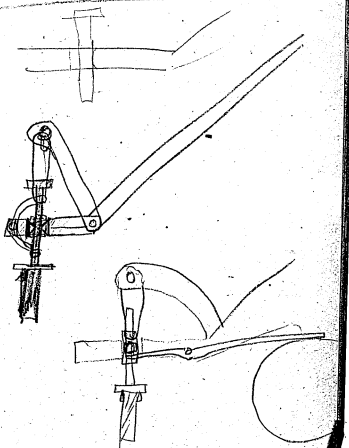
Plumsgh

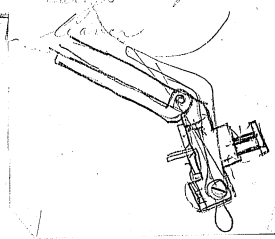
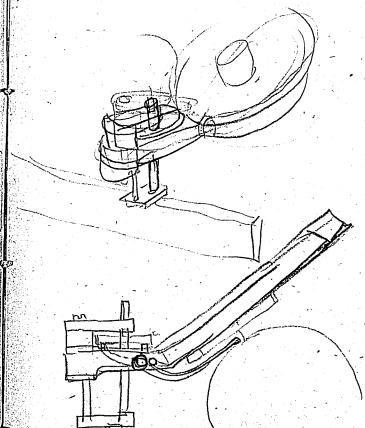


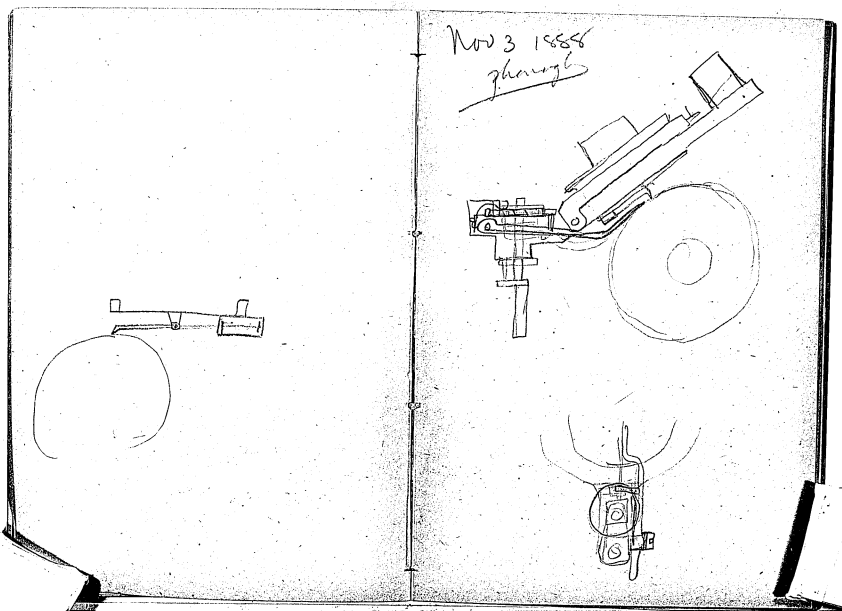

Nov 1888 TAE

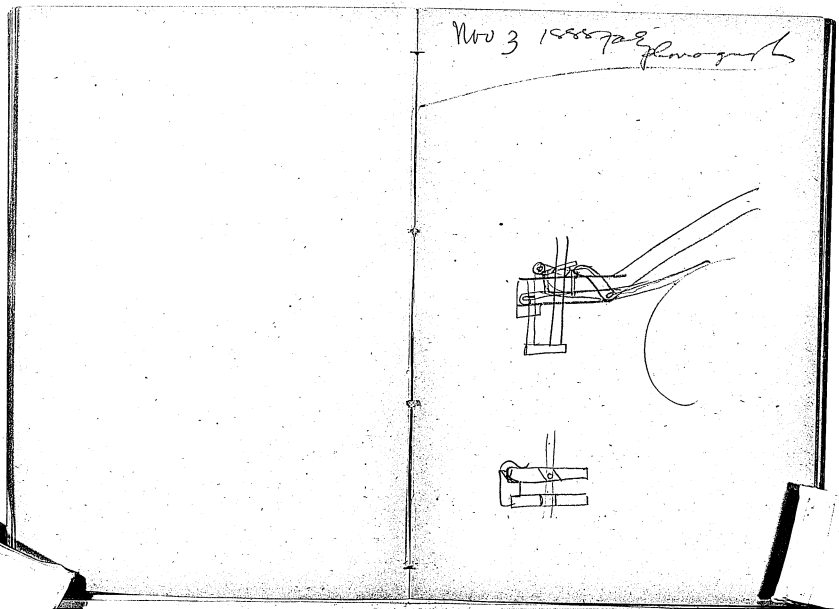


Nov 3 1888 Val phonograph



Set this magnet
back. Mr into door
the Budge and
carry shaft on

Nov 3 1888
To explain


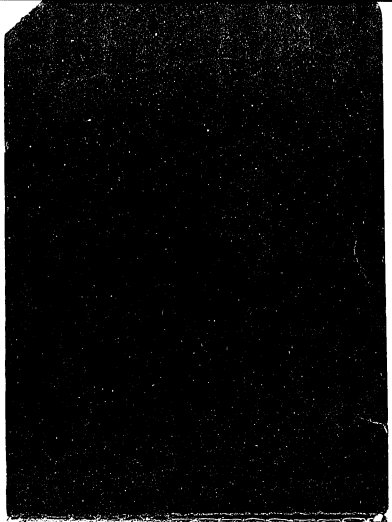

Nov 3 1888
photograph



**Notebook, N-89-00-00.1**

This undated notebook was used by Edison, possibly in 1889. It contains drawings of lamps and filaments, calculations of costs for ore milling, drawings of ore separators, lists of compounds derived from a multi-volume work on chemistry, and other drawings and calculations. Although part of the N-series, it is not a standard-size notebook but is physically identical to PN-87-05-08. The front cover is stamped "Note Book." The book contains 123 numbered pages; the entries run from the back to the front of the book.

This book has been filmed at a reduction ratio of 15:1.



Acrolein Ammonia – solid Compound
action KH on acrolein – amorphous,
Turns brown at gentle heat
decomp at 100° Vol I p 57–

Allantoic acid Vol I p 132,
Allophanate of Glyceryl. Vol I 134
Residue (black gluten) heat on Oil Garlic
Vol I p 143
Aloretic acid Vol I p 148
Black pitchy Mass action SO$_2$ on Amyl alcohol
Vol I 204
Anchusin – Vol I p 290,
Melanisic acid – p 298 Vol I
Nitrianisic acid Vol I 302
Anisuhmii – Vol I 306,
Black pitchy Mass, action Pent of Phos on Hydride
of Anisyl. Vol I 307
Annatto Vol I 307-8.
Arctuvin Vol I 356 –
Arsenic Sulphate Vol I 357

N-(89-00-01)

Camphor — Aureole Merck's Can amorp Vol 1 476

Bleeck Recon action Chromic acon Bebonic
Vol 1 526,
Action of Potchlorate KClO on Benzoic a
Vol 1 555
Benzoic Can ~~Goic~~ melts 206 C Vol 1 581
Hexaglycerie Bromoform - Bleeck cryst
Compound Vol 1 668 See chemical extracts,
Bromodoform — p 680 Vol 1
Bromoform - Solubt - Vol 1 680
Pitchy Mass — Brunolic acid Vol 1 684
Camphoreain Vol 1 730
Caramel Compounds Vol 1 747-8
Caryophyllin ~~Vol~~ Camphor like -
Vol 1 809
Chelidonic acid - Vol 1 847 -
Chelidonate ammonia — 1 848

Chinolin - see Diamphins Vol I 870
also chinoline 1, dict etc p 873
p 920 - 14th line from bottom
Chlorophyll - infusible - p 922. Vol I
see Erythrophyll - same article,
Cholophaein - infus - p 928 Vol I
Cholochloin do
Cholocoanic acid .. 929
Chrysaminic acid - diamphins
p 956 Vol I
Chrysanisic acid - boiling in KO
black 526 - p 957 - Vol I
Cinchonia Red 969 - Vol I
Dibromocinchonine - p 978 Vol I
Citrine for Salut, p 1001. Vol I

Monocalromannitan, Vall 1002

Oil Lemon for Aylesworth,

See Separalum by KO of brown sub from Oil Lemon 1004 Vall 1

Cncim - p 1029 Vall

Oxalati Codeine, 1066 vol 1
Tribromocodeine, 1067. Vol 1

Comenic acid 1103-4
acid C + ammonia - 1104

Convalvulin - Vol 2 15
Copaiba - action Sodium - p 16 Vol 2

Oxycopaivic acid - pitch & humin
Val 2 18.

Camphor paraffine salut Copaiba -
Val 2 . 20.

Coriander oil - Val 2 84

Apocrenic acid Val 2 103

Saponifies Croton oil & Black Resin Val 2
p 112

Crotonol - Val 2 113

Curarine - Val 2 185 -

Cyanide Ammonia changes into Prussic
Acid - Azulmic a Val 2 203.

(9)

HCy – Dscamplw Val 2 218,
Cyanogen Sulphydrate – Glucic
sub etc – Val 2 285 –
Dalbergia – Cannabina Val 2 306
Doppleriti – potash – Val 2 345 –
Dragons Blood – 345 – Val 2
Dulcite = ammonia Salt DWM
Val 2 350 –
Elaterin – Val 2 373
Elemi – oxyolyd Resin DWM Val
2 483
Ellagic acid DWM 2 484

~~Carbethyl dow by dug~~
Ayerst worth Val 2 530 - aclean
Chlorine and Ethyl C -

Dibromomethylene - Val 2 570
Ayerst worth - Dichlorethylene
Val 2 573 -
Eucalyn - 2 601
Flavine 656 - Val 2 -
Fumaremedo Val 2 746,
Gallica - Val 2 760
Gallotannica - 2 766

Gentianic a – 2 830
Geocerie acid 831 – 2
Glucic r apoglucic 2 848 –
glucose 85-9 antieth 6 410 17.22
glyceric anhydride – 876
2 molecules –
See p 880 much from bottom
glycerin dissolves in chloroform
action ChlZn p 898 middle page
glycocine p 903 action chloro
Vol 2

(15)

Chromate of Dipicoline 2 904

graphitic acid - 2 948 —
see Cowrath also

Dilituric acid 2 965 —

Haemaphein — BWM - Vol 3 p 1
Haematein " "

Amido-hippuric acid vol 3 160

Horny tissue action Chlorine Vol 3 171

Humopic acid vol 3. 175 —

Brown mass into Humic a — Hydrogenous action
NH + KO Vol 3 213
See also Decomposition

Brown sub — action NH on Carbohydrogenous
acid — Vol 3 215 —

Dichlorinated Hydroquinone - action USA
Vol 3 216. also Tri & Tetrachl.:

Hypogallic a Vol 3 239 —
Quinoline Vol 3 245 —
Indefuscin DWM - Vol 3 249
Indigo blue - Descriptive Vol 3 253
Sulphindigotic acid - Descriptive
Vol 3 259
Sulphindigotate Ammonium - DWM
Vol 3 260
Indehumin - Vol 3 p 264
Hydrindin DWM - Vol 3 266
Iodoform Descriptive Vol 3 311

Isonaphthin -Val 3 313
Isatin-Decmptn Val 3 407
Isatyde-3-411
phenylilacconamic acid-Val 3.736
Jalapin Decmptn p 439 Val 3
Japonic acid 3-442
Lactic acid Dzcomp-hmmm Val 3 437
Legumin-Dzcomptn. Val 3 569
Leucine-actim Chlorm-3-557
Linseed oil-actim Phosphorous 3-703
Luteolin-Dzcomp 3 736

Melanic Acid good Val 3 867
see also action attempts on Quinone 867
Melassic acid - 3 868
Melbulmic acid 3 984
Action NaO on Methyl-blood Sub - 3 989
Milk Sugar Decomptn 3 1023
Morinlannic acid 9th Line Bottom
Val 3 1049
Sulphomorphide - 3 1055
Hydrodate of Ethyl-morphine
Val 3 1056
Mucamede 3 1057
Mucate Methyl 3 1059

Mun'iolan
~~Accelerator~~ boilers P – 3 1062
Naphthulmin 4 19
Action $NO_3$ on Naphthyl-diamine
4 23
Menaphthylamine brownian 4 24
Nigric acid - good – 4 48
acetylene – 4 172
Oenthal. Decamp – 4 175
See Orb Volatile Reactions 4 190
Olivil decomp 4 200

Orcin - chrom acid Chrom KO - 4 213
Tribromorcin 4 214
Tri-iodorcin - 4 214
Oxanilene - 4 287
Oxynaphthoyl Cumino Dcam
4 314 -
Pectic acid Decomptm 4 367
see salts'

Phenicine acid NO3 4 388
Nitrophenic acid - 4 394
Picramic acid - Decomptm 4 406
Picramate NH4 - 4 407

Tarry residue – phenyl Sulphide – vol 4 417 –

Action $NO_2$ on Aniline bottom 4 422

" " Chlorine on Aniline bottom 4 423

Tetrachl Carbon + Aniline – 4 425 –

See 30 – p 426 – vol 4

Sulphate Aniline Salt water, 428

Sulphate of Chloraniline – 440

Cyanilide – 441-2

Dicyanomelaniline Drum 4 464

Try Camphor with Aniline – stop Cracking yellow Chloranil etc

Phloramine · Δ Ecomp 4 488

Nitrophlorelin DWM 4 492
Melaphlorelin — "

Phloroglucin-Reaction 4 494

Phlorone - 4 496

Humusbodies aichenphos on
Carbsoda — 506 4 Secchiakarbol

Physalin - 4 634

Picrotoxin DWM 4 643

Pinepicrin — 4 651

Piperic acid action Hydrodic a
val 4 654

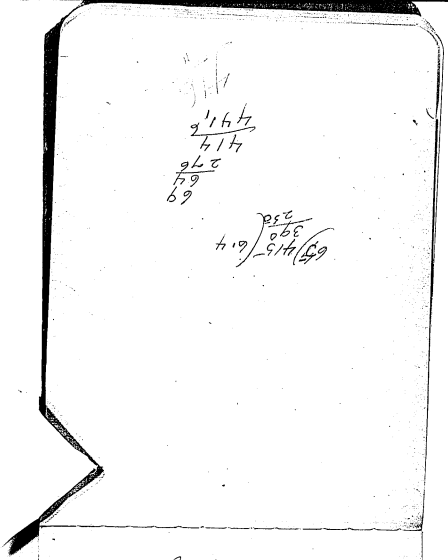
Pittacal – 660 –

Potato fat DWM 4 723

Pyrodextrin 4 758.
stoccens Lowe that nitration
for my purposes should be with
100 cc acid instead of
strong acid remember the
oldest amine research –

Pyrogallic a – 758 9

Pyrolartrimide
allocks + glaulz- paper
4 775 -
Pyroxanthin adam Chlor-
4 - 776
Pyrrhoretin. 4 783
Pyrrol Red 4 784
Quinine DWM. 5-17
Quinone - Reactions good -
Vol V 27



Quinoylic DWM – 5– 84
Racemocarbonic acid –
properties, 5– 40
Roccelic acid – 5– 117
Rubian DWM – 5– 123
Rubinic acid – 5– 132
Rufigallic acid – 5– 133
Saccharic acid – 5– 143
Salacin DWM – 5– 148
Heating Indigo – See Salicylic a
5– 152

Salicylic Chlorhydrate — s- 161

Methyl-Dinitrosalicylic acid - s- 164

Bromosulphosalicylol — s- 172

Salicylsuric acid Drum s- 172

Saponin-Drum-s- 194

Sarcine Drum s- 196

Sarcocolli Drum s- 197

Actum SOy Sassafras Ord 5- 199

Sassaumbun - 5- 200

Try Shellac in Reg — see 5- 239

Silk - 5- 276

Actum Bromine a Eleanc a
5- 416

Sugars of Milk 5- 467.
do p 471 -

Dibromonalphanlic a
5- 479

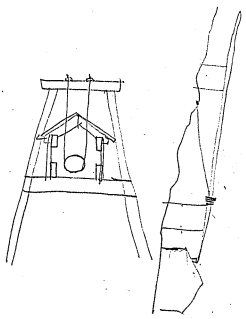


69 - 48

2·42

2·42

2·42



Amidosulphobenzoic acid
DWM 485 5-

Ethyl Sulphobenzoate DWM
5- 488

Sulphanilic acid 5- 5-16

Methyl Sulphocyanate 5- 5-20

Sulphobenzic acid 5- 5-22

Sulphosuccinic acid DWM 527

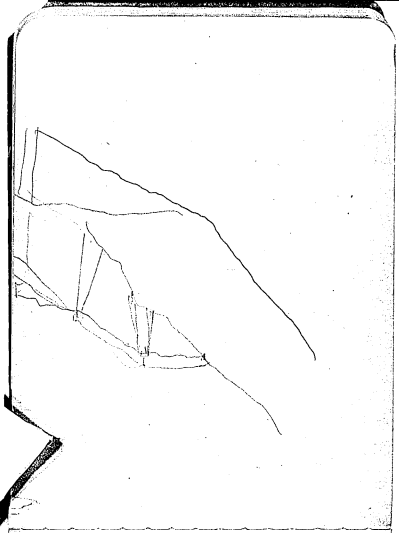
Naphthylsulphonic acid
5- 580

Naphthylsulphonic acid
5- 5-62

Amyl Sulphide ammonia
5- 620.

Sycoretin, 5- 647
Tannaspidic acid
5- 659
Tannoxylic acid - 661
Terephthalic acid not sol
Publ. - with fuscin sol
Chloro - water by oxdn
Imp. - in cold HNO3

Thiamsoic acid 5- 774
Thiet-sic - 775-



Thiomelanic acid 778
Thiosinamine - 781
Thujin - 790
Toluidine - Ioppage 866. 5
Benzyl-acetic Na - 870
Disulfobenzyl - ~~sulfo~~ bottom line 870
Bromobenzyl-DUTH 871
Mauvaniline ~~under~~ Polyleno Th
Val 5 - 873
Trigenic acid - 884

Tyrosine 932

Amidotyrosine DWM 933

Erythrosin -935-

Ulmoo sublate - 936

Uramilic acid DWM 940

Usnic acid sodium alkali - 970

Valylene - 983+2

Veratrin 995-

Violaxanthin 1000 1001

Viscin-dry distn-asphaltic residue 1003

Phenocyclamen Wrāling
1007 – vals – Villaamyhm
+fils –

Guaiandum 1008

Cinaephone – good. 1048 V

Cinaephane – " 1048

Xanthine DWM – 1051 V

Xanthopraleaie acid DWM 1053

Xanthorhamnin – 1053

Xenoglaucine Derivatives of Steroide Compounds
p 1055 V

(51)

70 | 1500 | 222
1400
1500
1700

3½
2½ 60
8
35·
10·
310

Xylocodein — see also Barbaloin $H_2O$.
See Salicylic Xyloidin —

paper fil salicylated with $CHCl_3$
then dried + gradually cbzd at 60
gelatinize it by cbzn —

Corcamyrtin . 1090 — s —

β-Dinitro-anchraquinone — 1st pt 3rd Sup — p 99

Azobenzene action SbCl pt 1 = 1st pt 3rds p 212

Metaamidobenzeneazolphonicacid DWM — 227 1st pt 3rds

15
12
75
12
225

361 / 225 / 136

19 / 361 / 19.
19
171
171

86- 275 deg folus. 19 amp

19 / 275 / 14.2 deg to amp
19
86
76
50

275 / 361 / 1.3
275
860
825
350

361 Hunit.

11 amp

1.3 HU to deg folus

136-

144
11
11

11
11
121
121
363

31 / 275 / 8
2911
84

275
84
191.

Diamidobenzenesulphonic acid
228 1st 3rd Sup — DUUM

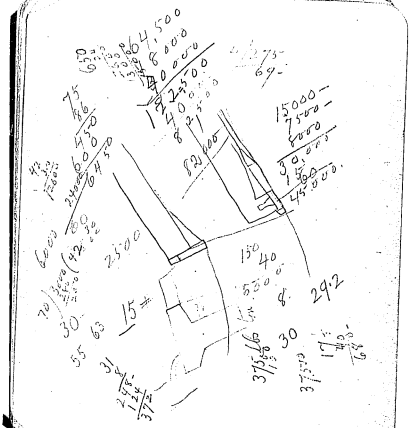
Dibromomidamidobenzenesulphonic acid — DUUM 232 3rd Sup 1st pt, DUUM

Amidoparadibromobenzenesulphonic acid
233 — 1st pt 3rd Sup — DUUM

Tribromamido benzenesulphonic a
233 1st pt 3rd Sup DUUM

~~Tetra tribromin~~

Tribromomidamido benzenesulphonic acid — DUUM — 234 — 1st pt 3rd Sup



Tribromomethanesulfonbenzenesulphonamide
3 — 234 - 1st pt 3rd Sup Dwm

Tetra-suct - Dwm - 234 1st pt 3rd

See Amide - middle p 241. 1st pt 3rd
Dwm —

See amide: 243-4 Dwm 1st pt 3rd
+ 3 —

" middle page 244 - the ~~chlo~~

Nitrodibromobenzene a — Dwm:
245 — 1st pt 3rd Sup

See amide-trichloride 3 methyl Dwm
p 248 - 1st pt 3rd sup

See p 257 - 1st 3rd Sup'

Thiocarbamidobenzoic acid
DWM - 269 - 1st pt 3rd Sup

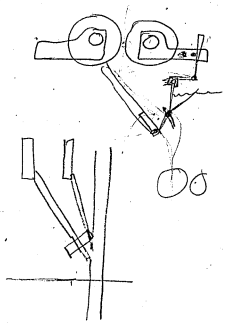
Thiocarbamidobenzoic acid
DWM - insol in Alc and solvents
p 269 - 3rd Supt. pt 1

Hydroxybenzoic acid - 277
DWM - 3rd Sup 1st pt

See top p 278 - 3rd Sup 1st

Monoubrodiazooxybenzoic a
. DWM - 278 - 3rd Sup 1st

Condensation products Aniline a - 293 3rd Sup
See 2nd Line above Benzoyl-dimethyl Cmpd
p 312 1st pt 3rd



Naphthyl – Thiocarbamide –
398 – 1st pt 3rd

Carbon monosulphide – 406 –
1st pt – 3rd DUM – at 200 C

Catechin – 416 – 1st pt 3rd

action ammonsulphide on Chloral hy
441 – 1st pt 3rd sup see K 6
action Kt Nos pp –

action Na on Chloroform – 459 3rd 1st

Tetranitrochrysene – 465 – 3rd 1st

See Dry distln – 469 – 3rd 1st
pp 2

See action Nitrous a on Chrysoidine
pp 5 =
also Chrysodenes alphonic a –
DUM 469-70 (61)

36" to 14
14 to 7
7 to 3
3 " 1/2
1/2 to 1/4
1/4 x 64
14 to 50

22

7/345

22 40 / 2100 49 1/2

2240000
4480
5,1724,0000 50
33000 / 2362,0000 (

25
45
65
70
30
80
60

10
5
8
15
20

33000
98,0000

200000 / 236200000 (118.
200000
362000
200000
162000000
16

175 =

480

480
3000
3000
3000
3000
1980

20 240
40 1/2

Cinchonine =
Morphocinchonine Diam
483 - 3rd 1st

Cinchonicine = 487 - 3rd, 1st

℗ - 5 - p 490 - 3rd 1st

Cyanamide - good See ℗ 5
p - 598 - 3rd 1st

Diconic acid 641 - 3rd, 1st

Digallic acid 646

Benzidine - hollan ℗ = p 661 3rd

α-Diphenol - ℗ - p 664 "

Diphenyl-dicarbonic acid DCM
668 - 3rd 1st

Fluorene – with hydroxide – 672

Nitro derivs of chlorbenz 677

Echecaoutchin – nuts for pills – 5 –
689 – 3rd 1st.

Dyes from phenol – 697

Sulphonated Dyes 698 – 9

Toluidine salts at anode Bromsub –
sal ac – 710 3rd 1st phenol yields
Bromsub – see acetate anilide

Sodium Ethylate – human body 749
3rd 1st

Ethyl-oxyoxalyl Chloride –
759 —

Action Bromo Eugenol 762 3rd 1st
Ethyl Eugenol - 763

Oxidation Fluorantheue 795

See Reactions Urea with Furfural;
833 3rd 1st

Acetyl Furfurum - 837

Action Nitrous a on furfurum 837

Reaction - p 23 1st sup also
action Iodine

Acetylsuic acid 29 1st sup

Acetylene - 32 - 1st Ayl & w alth
for its - good article great
stuff - Jamdan Carbon p 33

Aldehyde ou Cyanamide 1st sp 73
action SO4 Diallyl. 92 1st
Br compounds of allylene 96 – 1st
Amyl Calor. dutton-foot p 108 1st
Bromanisylene Dibromuride DCVIII.
120 1st
Anesthesine 171 – 1st.
Fritzsche's Reagent } 180
Dendro-anthraquinone } 1st
Atropin – 250 1st
Avornin – 251 1st
Benthalats Bitumene – 261 – 1st
Stramp of Begnie –

Dichlorobenzene sulphuric acid
DIUM Red Roof 475 151—

Toluidene-sulphuric — 288— 151

Benzoxythrene funny stuff —
p 304 151

Thiobenzoic acid — DIUM — 324 151

Try Sipriani again with Camphor
or dilute dilute in the Sul
+ put cl86 in Benzene —

Dizamp DI + Di-benzylamine —
337-8 151

Betaine = 340-1 151

Bitumene – 349 – Berchelot – 1st = may be thus obtained from Camphorville Coal.

Bixin = 350 – 1 1st

Camphor Resin – 388 1st

Camphronic acid – 390 p

Caramel – 396 1st

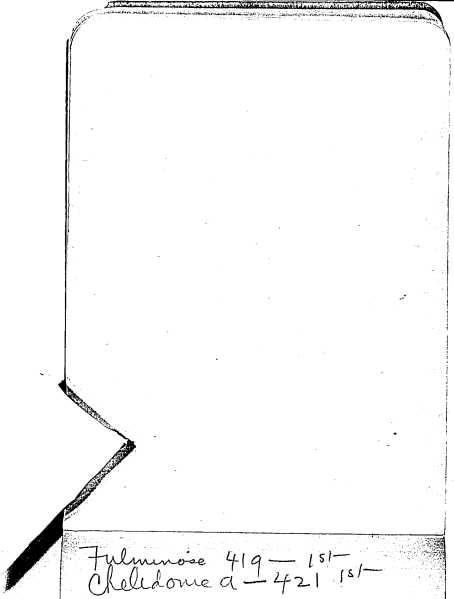
Carbohydroquinonic acid 1000 – 399 1st

β 3 – p 409 1st

Carbon Sesquisulphide good – 410 – 1st

Caleghin – 416 – Catechu acids

Cathartic a – 417



Fulminoïc 419 — 1st
Chelidonic a — 421 1st

Chenaline sul acid — 430 1st
Cinchona Red — 462 1st
Colophonen hydrâte =
acidum Br = 482 1st

Grahamite = good — 653 1st
Helleborin = 695 1st

Hydrazo-anisine — P — see Nitroanisol
Idrin Hacmalyn — 703 1st
Isalochlorin DCVM 758 1st
Isodeoxystearic acid DCVM 759 1st
Lanthopine DCVM 774 1st.

Lydine — p 793 1st

(70)

Sulphonalica – 799 800 – 1st

Oxynaphthal good – 857 1st

Phenol – 906 1st Reaction

Last 8 Lines p 920 1st

Dibromophenylene-diamene 0207M – 923 1st

Beyond this in 1st Sup not marked — 2nd Sup not marked at all

Boil very finely divided Cannelcoal with linseed oil,

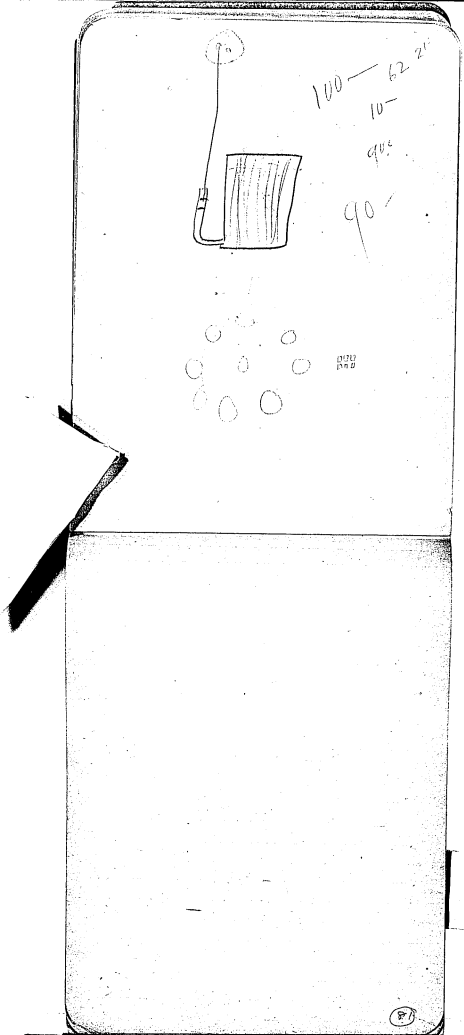
Try Toluene – Chloroform or other Solvents –

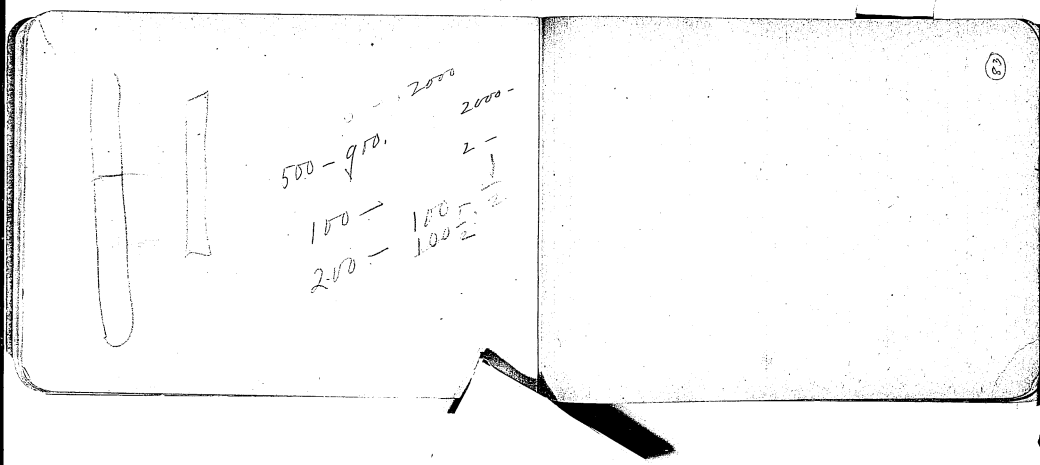
Ozokerite - + all kinds
Asphalts -
Try 100 cc on Coal + wood tars
Wood Tar pitch = also Rockflx
Resedue = previously had acid to
slimy = also on 'stearine acid pitch'
100 cc on Crude Petroleum -

Dry distillation in Chl Zinc Sol.

Dammar - + other Resins -
Rockflx Residue -
Sugar
Syrian -
Dextrin,
Rosin -
Balsam Copaiba -
Blende Ozocerite,
Get small glass bent tubes like relorts
made by you - Try all organic Metals
& salts for black residues + powder
then by solvents -

(79)


100 — 62 2"
10 —
90 —


500 - 900.
100 —
200 —
2000 -
2 —

(58)

11 | 11 | 50.9 | 11 | 5.09 | 5.09 | 5.5.99

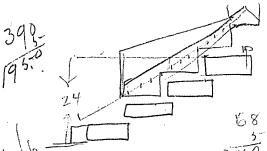
509 lbs hour

60 | 4.00 | 240.00

509 | 24000 | 2036 | 3640 | 3643 | 3.66 | 47 holes

9 inches apart 36 | 12 | 72 | 36 | 432

47 | 432 | 423 | 90 | 9.




398 | 195.00

36 | 16.

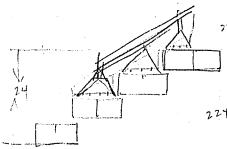
.12

6 Min

24 | 6 | 4400 | 3440 | 960

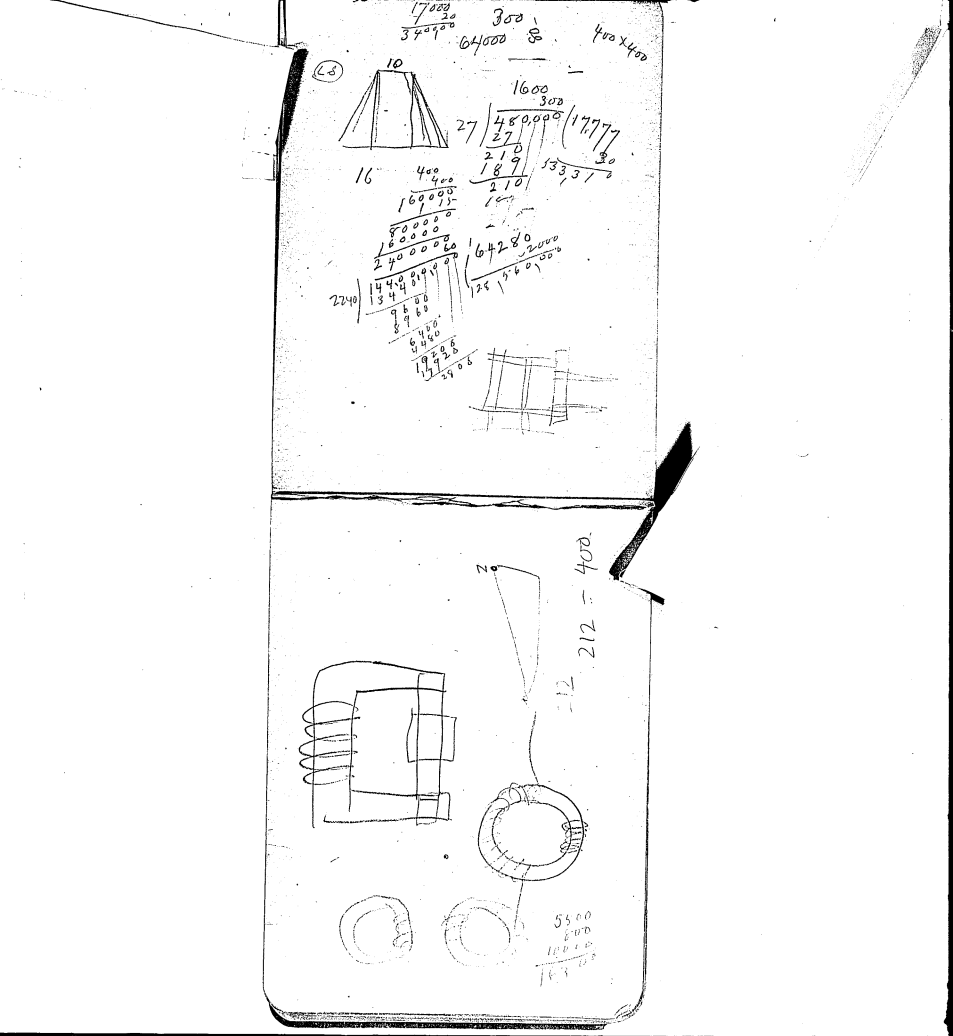
2240

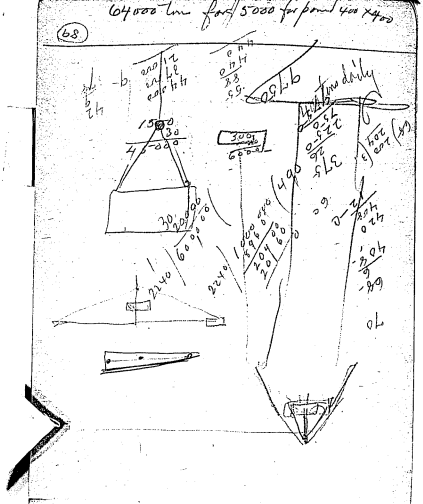
68 | 3 | 340 | 12 | 15 | 1.25 | 90 | 15 | 2 | 30000 | 20000

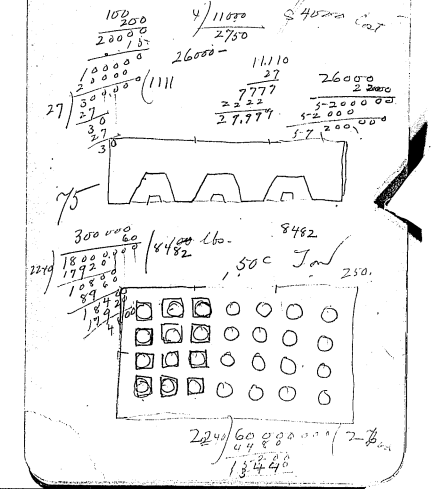


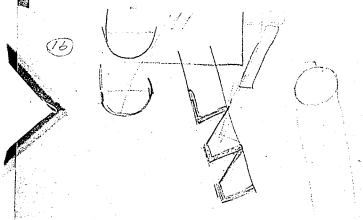

3000 | 180000 | 2240

500 | 6 | 3000 | 60 | 44 | 2240 | 180000 | 17920 | 10560




64000 lbs
load 5000 for proof 400 x 400
68
-b-
drive
1500
4
3000
60000
30,000
60
2240
4000
1000
800
400
200
100
80
60
40
20
10
8
4
2
1
375
375
90
70


100
200
200000
200
100000
200000
4000
1111
27
30
27
3
4/11000
2750
$40000 cost
26000
11110
27
7777
22222
27,777
26000
2
52000
5-2000
5-2000
200
5-7
75
300000
60
18000
17920
10800
8960
1840
1792
48
4
8482
84820 lbs.
1,50c Ton
250.
2249
60
2240/60000
2-lbs
134400



13 Cakes Spec-g .180 to 1.046

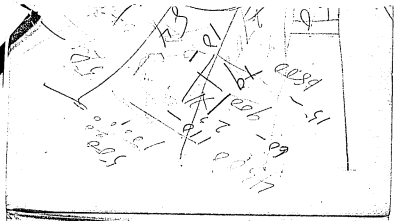
100 grams Weight varied from

52.18 to 67.12 Cubes Centimeters

320
253
230
180
123 —
88 —

9 1/2
9
8 1/2
7
5 1/2
4 1/2

225
185
125 —
45 —
38
31 —
28



| Sulphates | | Sulphides | |
|---|---|---|---|
| $SO_4$ Calcium | 3184 | Calcium | 896 |
| Mn $SO_4$ | 2499 | Iron | 444 |
| Ferrous | 2356 | Ferrous | 238 |
| Ferric | 6184 | Cobalt | 197 |
| Cobalt | 2305 | Ni | 175 |
| Ni | 2294 | Zinc | 396 |
| Zinc | 2300 | Cu | 183 |
| Cadmium | 2212 | Pb | 183 |
| Cu | 1826 | | |
| Pb | 2162 | | |

Nos 500 — Layers
No 11 900 "

901 — 145 | 10000 (68 9

145 | 2000 (13,

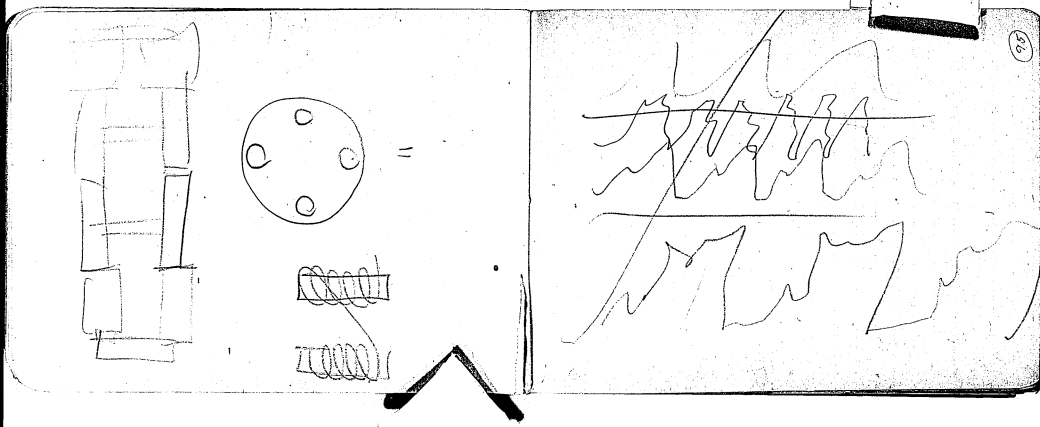
145 | 10000 (68 9

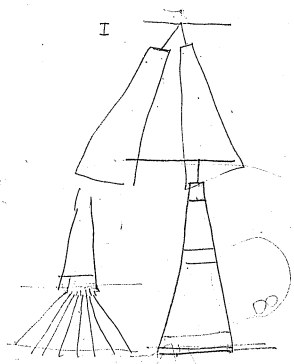
8

64-Nil 50 —
Nos
10 Layers

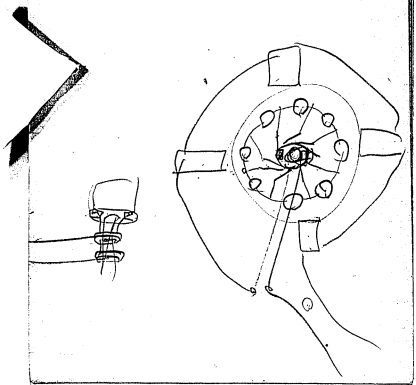
200 | 10 000 (50

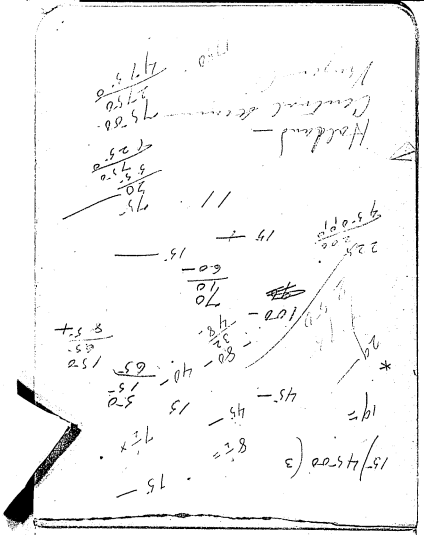
200 | 2000 / 40 — (93)






Fe
Mn
Co
Zn
Ni
Cd
Pb
Cu





500
900 - 12 amp 60 volt.

60/900 (15 ft to volt.
600
3000
300

15/500 (33.
45
50

15
33
45
45
495 -

5.5 -
1
20% mor 33 volts
16.5 volts —
8
99.0

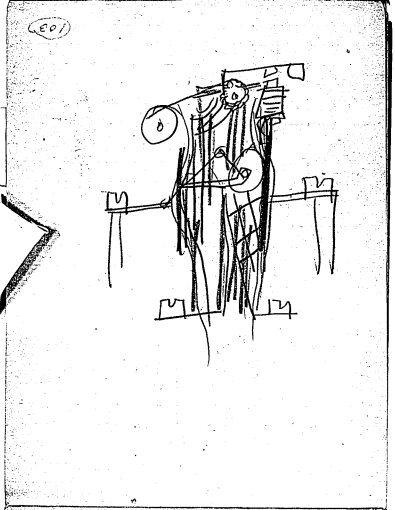
20000 -

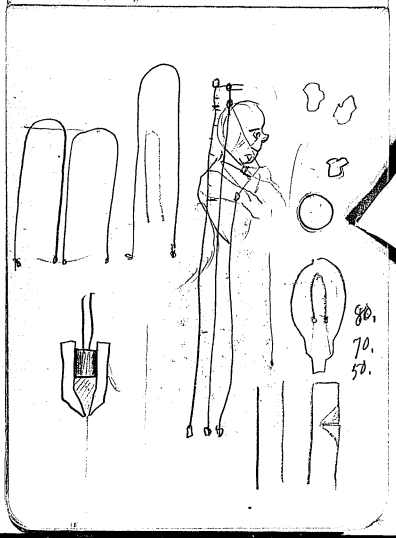
24
44
96
96
1056 -
99
9504
9504
0.41,544

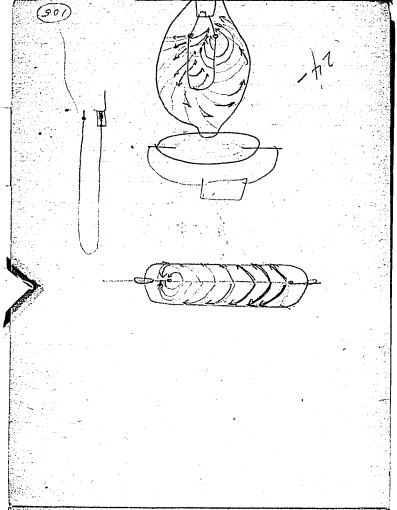
0
4.5
8
20
27 160 —

300 min -
8
2400.
200 ft min -

15/4500 (3
8½ =
. 15 —
7½ x
19 =
45 —
45 —
15
50
15
40 - 65
80 -
32
48
*
29
100 -
~~90~~
70
10
60 -
150
65
85 +
15 —
225
200
45010
15 +
11
75
20
55
750
125
Holland —
Central [illegible] 7500
2750
4750
[illegible]


(201)


90,
70,
50.



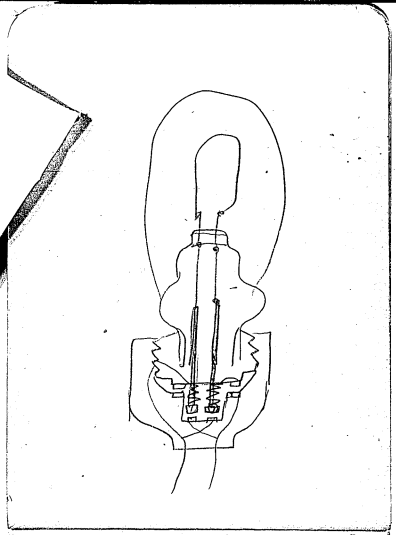
8 9- 27.

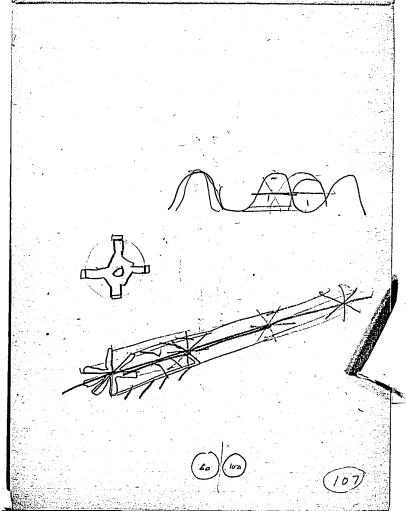
78
81
76
624
631 4

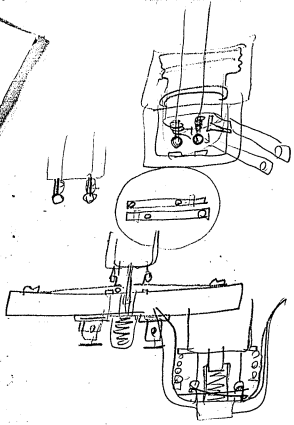
9

63

7. 3. 9
78
70
722 8







475. inches for loo Number

1728 / 1372.5 (.80 = 1/2
13824
42360
34560
8040

60
2850

460
82
920
3680
37720

1728 / 112.5

28 / 112.5

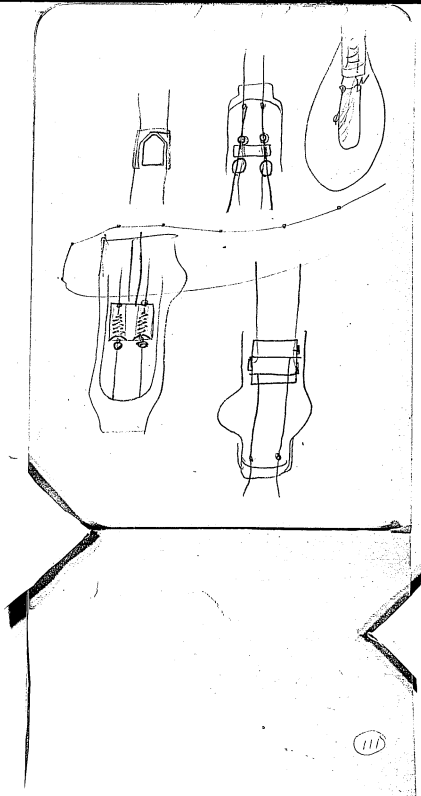
37800 sq.
7560

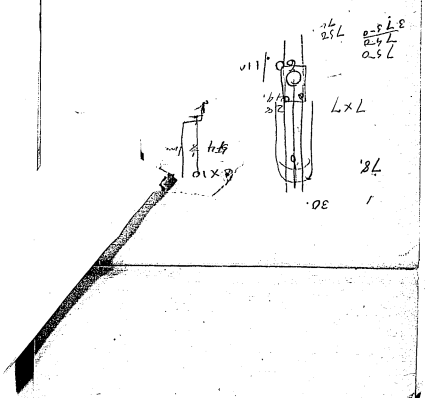
60 sq. inches per 20 hours

450 000 / 75600 (4.1

12 1
24 4 6
48 20 16 360 (18 per 20 h
56 44 200 / 16

24
18
192






1 Lb 10 Lb 6 Hp

1.20 20,000.- 5

10 Lb 3 HP- 10

20,000

1 — 1 (5200) 60 (231

2 4

4 16

8 64 3- 100-

16 256 4000-

32 1024-

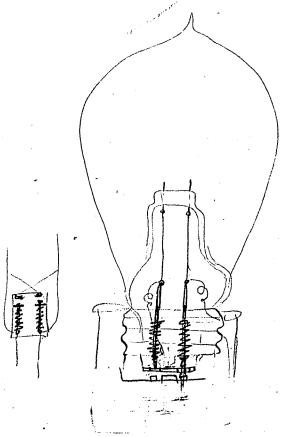
Photograph 75 slip 100 lbs

Photograph 600 Photoset Photoset Photoset Photoset

2560 (100 Hmin

244

(113)



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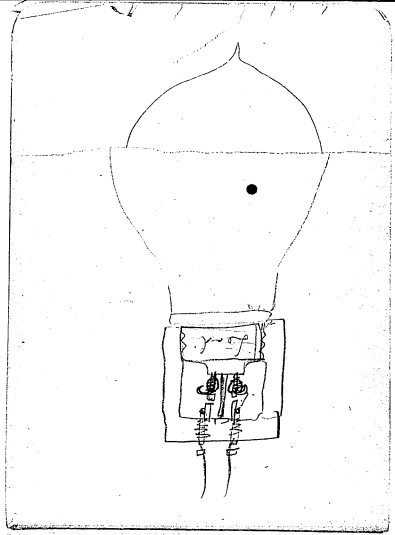
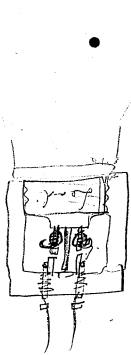
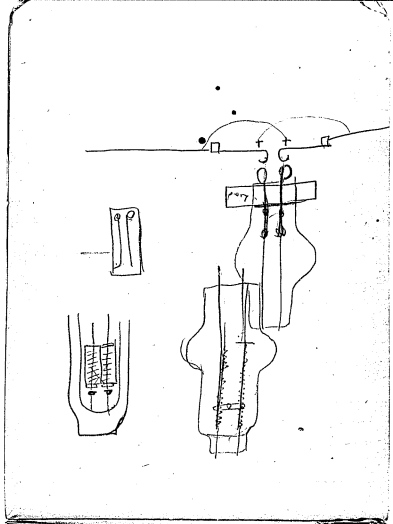
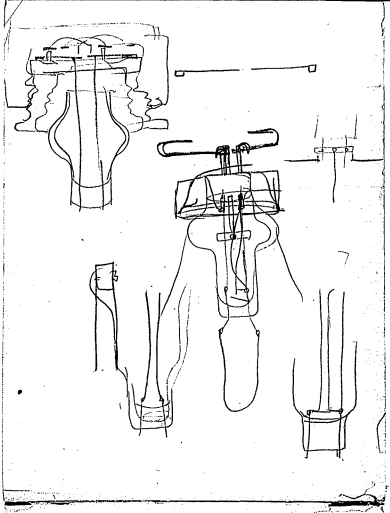
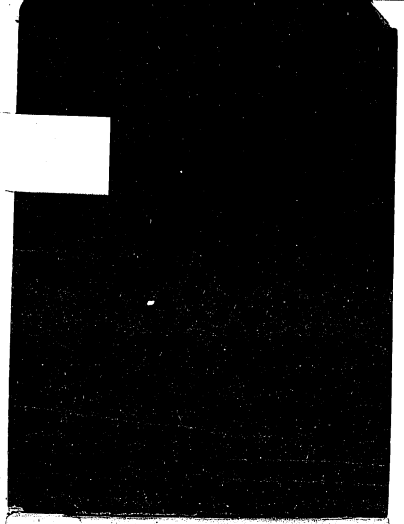










Salicylide $C_7H_4O_2$
Salicylic acid $C_7H_6O_3$

80
100
115
295

295
60
235

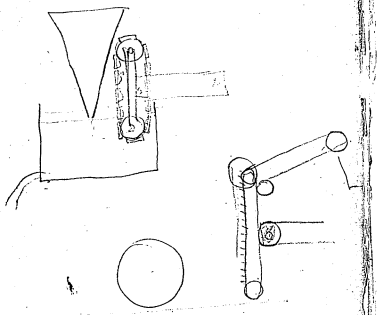
**Notebook, N-89-05-18**

This notebook covers the period May 1889-November 1893. The first set of entries are by Edison and consists of notes and drawings regarding ore milling, including a "wet separation" process. The following entries are by Edison associate William K. L. Dickson and include notes, drawings, and calculations regarding separation and analysis of Cornwall ore. The front cover is marked "3." The inside front cover is inscribed "T A Edison May 18. 89 #549." The pages are unnumbered, and the book has been used in both directions. Approximately 50 pages have been used. Inserted into the book are 10 numbered pages containing notes, drawings, and calculations by Dickson, entitled "Final Result of Expts on Bar Magnets - Ogden."

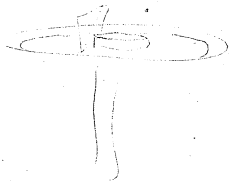
XE 822.8 N-89-05-18

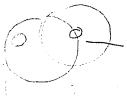
J. Adrian
May 18. 89
#549

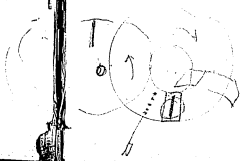
Ore milling May 18 1889
Page 4



Drawing May 18 1889

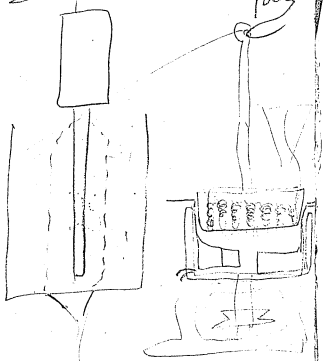


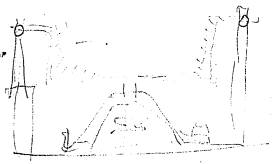


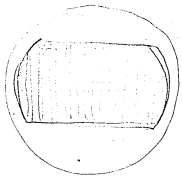


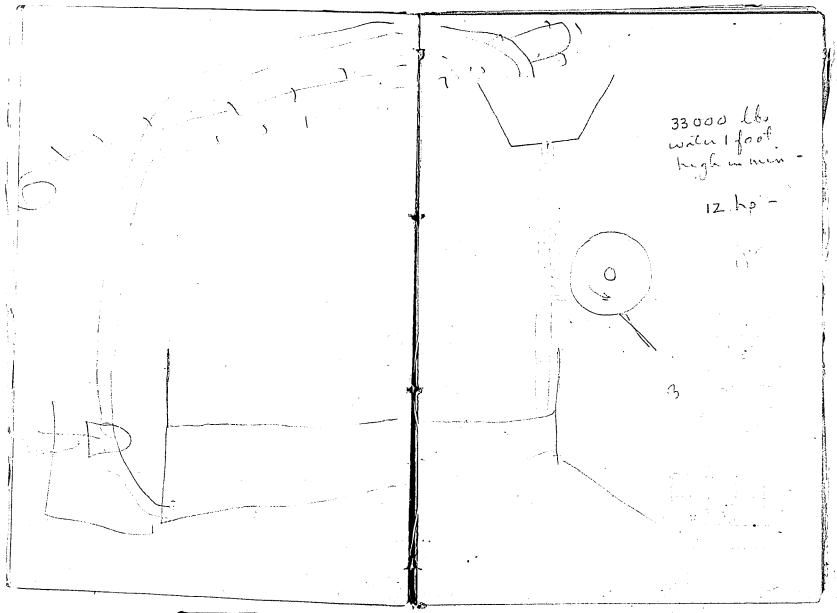
Dr Whiting May 18 1889

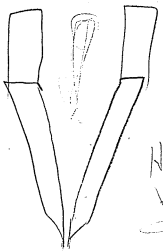
Tab








33000 lb.
within 1 foot.
high in mean -
12 hp -

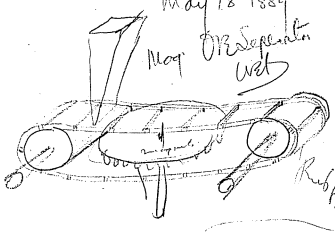


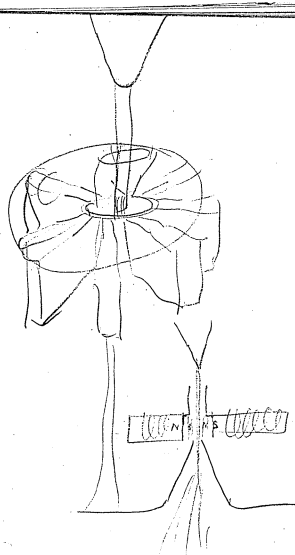
Ore Milling
May 18 1859

Hopper for ore
preparation

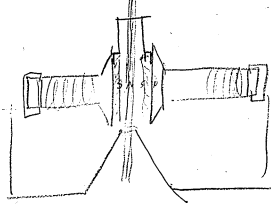
May 18 1884

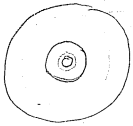
May 19 Oil Separation Wet

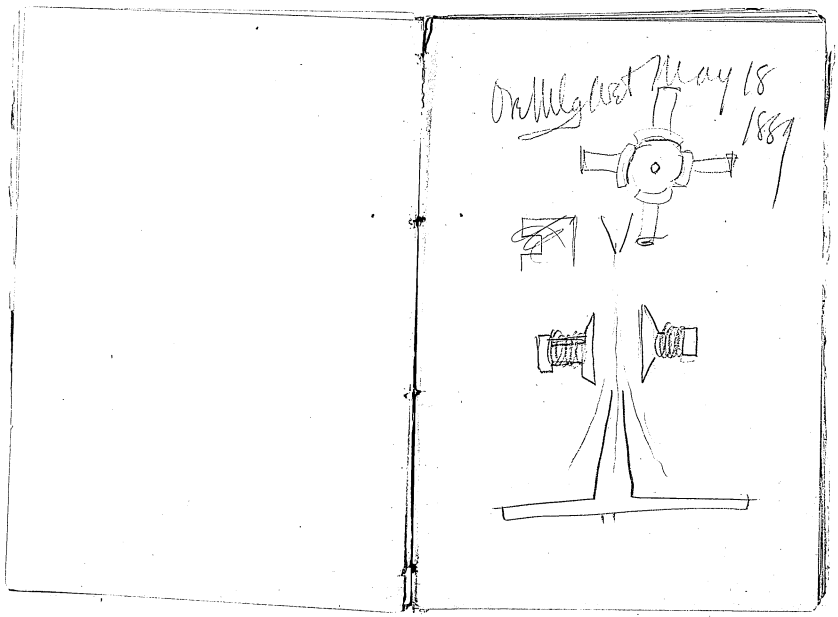


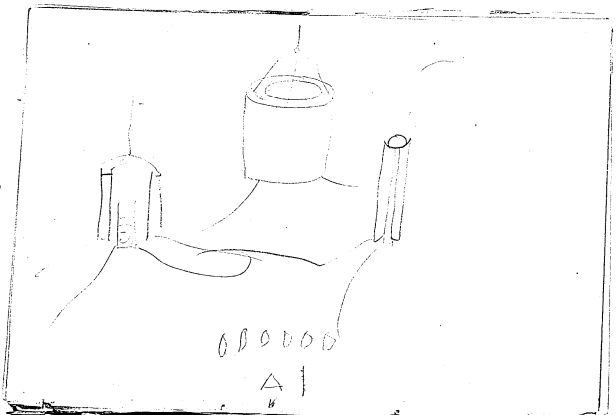

N
S

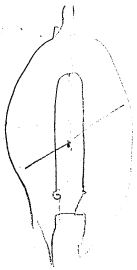
Ore Mlg west Sep
18
May 1889



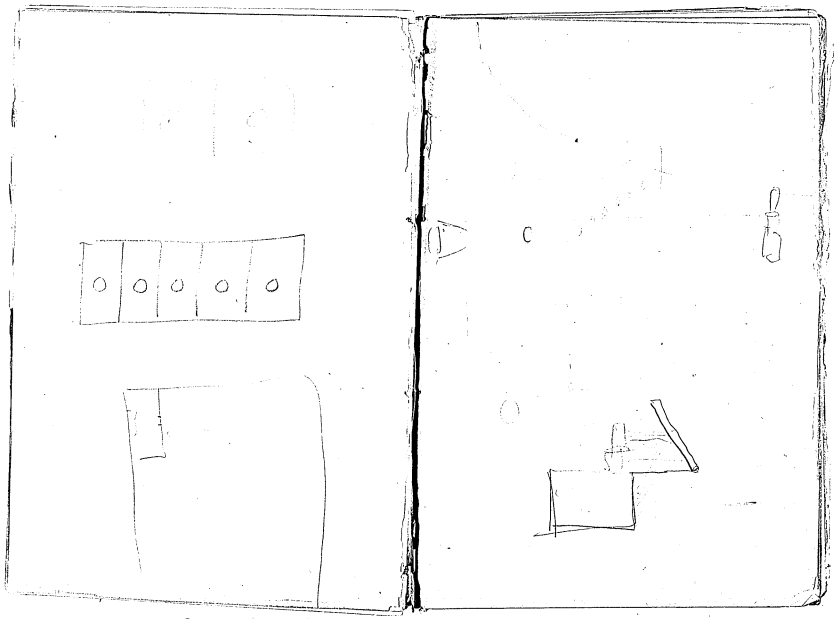


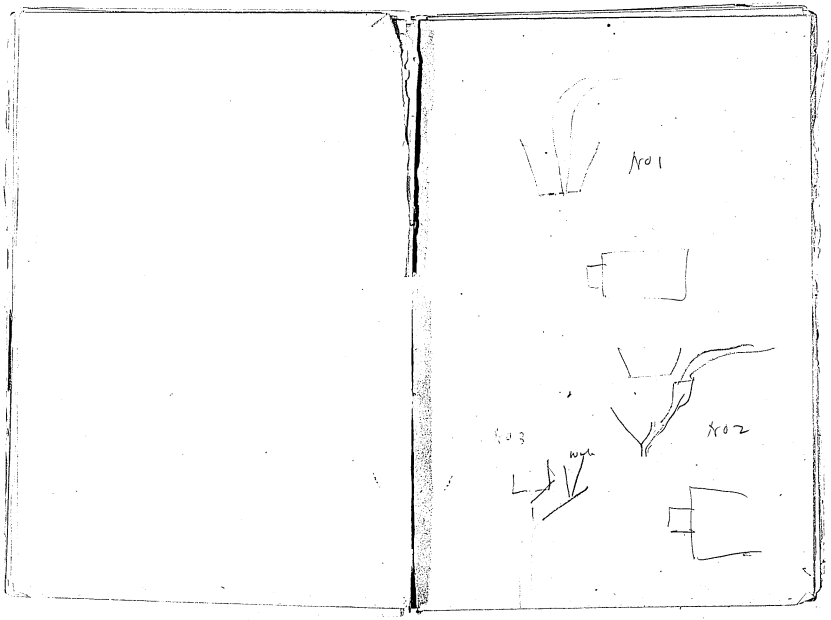

Drill Guard May 18
1887

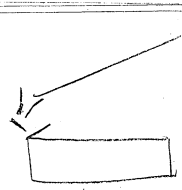




45- 46







- Bar -

Aug 3/93


lump test = Con - 48.87
1/4 [illegible] f" Yale 30.14

Aug 4/93

Short Test times all —

Con - 61.40
Yale — 49.41

2 Much Analysis

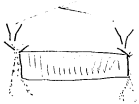
Full Test - Weight - Con - 22 lb. Yale 2½ lb.

Con - 59.72 -
Yale - 27.32 30.79

whites
art + all

29.05 av.

Lumps 1¼" Augs/93

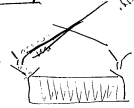


Cracked up ore before —
Separated fines & coarse
result — in weight

| | |
|---|---|
| Con — | 21. lb. |
| Tails | 3. lb. |

| | |
|---|---|
| Con | 58.72 |
| Tails | 18.64 |

Lumps 1¼" Aug 7/93



Dolly

Separation lumps of fines
as per sketch

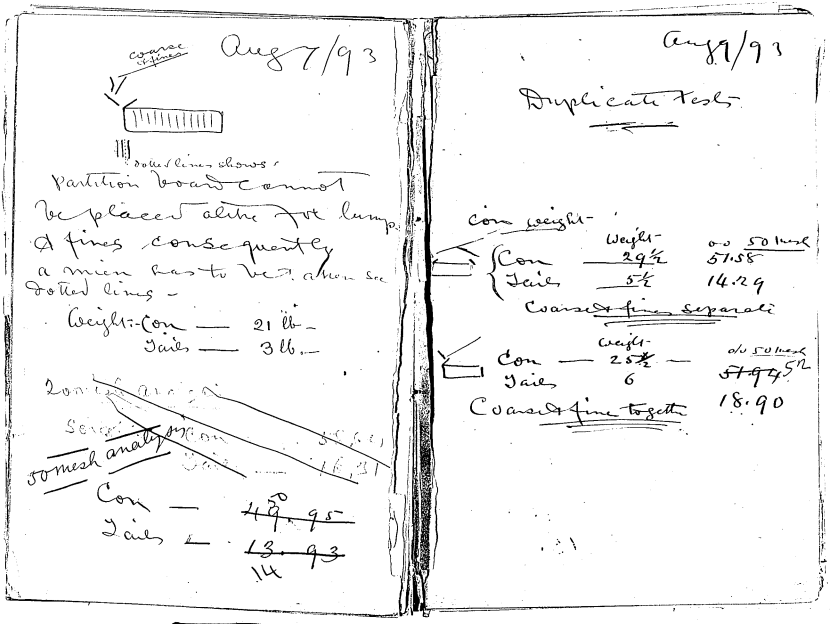
Weight

| | |
|---|---|
| con | 24 lb. |
| Tails | 5¼ |

Analysis :-

| | |
|---|---|
| con | 54.84 |
| Tails | 17.55 |

Aug 30/93

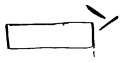

Aug 7/93
coarse & fine
double lines shows
Partition board cannot
be placed at the for lumps
& fines consequently
a mixture has to be taken as see
dotted lines -
Weight:- Con — 21 lb -
Fails — 3 lb -
Con — 49.95
Fails — 43.93
14
Aug 9/93
Duplicate Tests
Con weight -
Weight-
Con — 29½ — 57.58
Fails — 5½ — 14.32
Coarse & fine separate
Weight-
Con — 25½ — 49.95
Fails — 6 — 11.95
Coarse & fine together — 18.90

Aug 19

Duplicate Tests

(combined — coarse & fine

Sept. 6/93



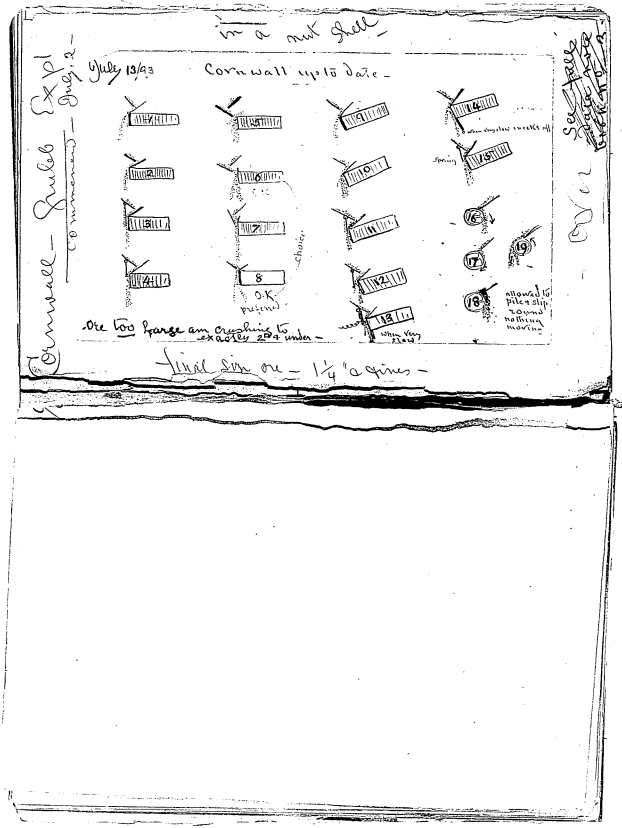
Taken Separately)
Jigs then
Coarse
Mixed for analy.

Weight Composite - 27 Con
" " Tails - 12½ Tails

Concen — a 50 mesh — 59.5%
Tails " " " 20.81

(combined)
Concen — 54.74
Tails — 24.00

Weight Con. 21½
" Tails. 7¼


in a nut shell
Cornwall Sales Exp!
Page 2
Commercial
July 13/73
Cornwall up to date -
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
short
O.K
printed
allowed to
Pile & slip
around
nothing
moving
Ore too Coarse and crushing to
exactly 2 3/4 inches -
Final Size ore - 1 1/4" agrees -
See Page
Book

Combined fines & coarse
50 mesh analy.

Summing up

Separate fines & coarse
50 mesh anal.

Corn 50.00 — Weight 21 lb.
Tails 14.00 " 3 "

Corn 52.00 — Weight 25 lb.
Tails 15.90 " 6 "

Corn —
Tails —

Corn —
Tails —

Corn 58.72 — Weight 21 lb.
Tails 18.64 — " 3

Corn 54.84 — Weight 24 lb.
Tails 17.53 — " 5 1/2

Corn 57.58 — Weight 29 1/2
Tails 14.29 — " 5 1/2

Corn Wheat 55.04 } Wash 51.84
Tails 17.16 }

Capacity 9.4 ton per side per 8

combined but shifting centre of mesh.

Corn 54.74 — Weight 21 1/2 lb.
Tails 24.00 " 7 1/2 "

Ditto but separate connection
(Separate separation of corn & fines.)

Corn 53.57 — Weight 27
Tails 20.87 " 12 1/2

July 18/93

Feed Conv

5 mesh sieve

coarse

2'

Fines

Final result
18.64 Barley } 50 mesh
53.84 Corn } mag. analy

floor line

16th Sept/73

Test

50 mesh annl.

Weight Corn 34 lb. — Iron 55.74
" Tails 16 - — " 30.76

Sieving the ore fines one side coarse on the other

Test

50 mesh annl

Weight Corn - 33 — 58.64
" Tails, - 19 — 31.85

the line for Coarse in the fines

one part of fines to 50 parts of the fine fines

3d Test

Sept 15/93


Weight - 3 lbs 26 1/2 - 55 44

" 12 - 27.14

4th Test -

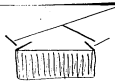
Sept 15/93


" Weight 2 - 57.55

" 9 - 32.03

1st

Sept 16/93



Weight 8 oz - 59.37

" 12 1/2 - 31.49

2nd

Sept 16/93


Weight - Coarse - 24 - 39.54

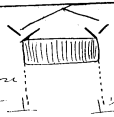
" Yarn 7 - 30.43

Division
Lines on the Line - plumb -
Coarse 1 1/2" out

Sept 18

Weight Con - 30 ft - 58.28
" Jails 6 — 28.68

Sept 18/93

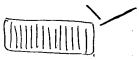


Weight Con 93½ — 58.28
" Jails 6½ — 26.60

| Sheet | | |
|---|---|---|
| #10 | Weight-Con - 32½ - | 55.40 |
| | " Jails - 6 ft ½ - | 24.25 |

8th Sept

Sept 1



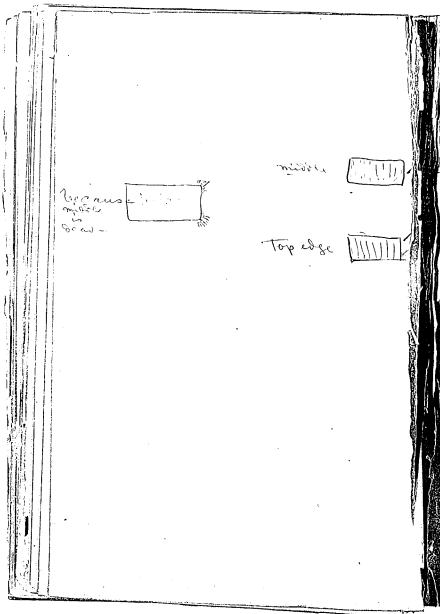
Weight-Con - — 29 — 58.64
" Jails — 8 — 29.32

Better results with
Board slide nearer top of
the centre is clear —

Sept 1

The magnet is too wide
for coil —

from the Top to the bottom
[illegible] - some less - Diam
[illegible] with Jails —




Averages

Over Ranging explains the changes in o/o —

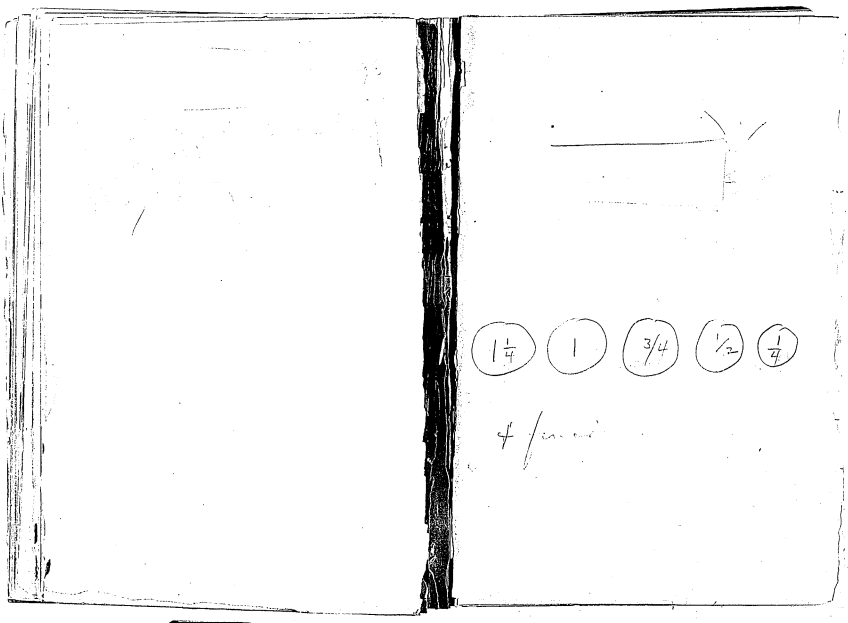
| Weight Corn | Weight Jacket | Analysis Corn | Analysis Jacket | Weight Corn | Weight Jacket | Analysis Corn | Analysis Jacket |
|---|---|---|---|---|---|---|---|
| 33 | 19 | 58.64 | 31.85 | 34 | 16 | 58.74 | 30.7 |
| 22 | 9 | 57.53 | 32.03 | 26½ | 12 | 58.74 | 27.1 |
| 27 | 7 | 59.54 | 30.43 | 39 | 12½ | 58.84 | 31.0 |
| | | | | 33½ | 6½ | 58.74 | 26.6 |
| 30½ | 6 | 58.78 | 28.68 | 32½ | 6½ | 58.40 | 24.9 |
| 27 | 8 | 58.64 | 29.32 | | | | |
| 139½ | 49 | 292.65 | 152.31 | 165½ | 58½ | 292.45 | 140.2 |
| | | Average | Average | | | Average | Average |
| Average Moisture 7.7 100 | Average Ash 9.8 | Average 58.53 | Average 30.46 | Average 33.10 | Average 10.70 | Average 58.49 | Average 28.04 |

% difference by 10 Samples Washing :-

not Washed Aver. 57.22 — Washed — 51.80

57.22
51.80
5.42

The above all were separate separate times & corns. seen.


1 1/4
1
3/4
1/2
1/4
4 fractions

Sept 19/93

Crushed up lots of Cornwall ore — dried by heat & got read[y] for series of sieves

ore in 2 thoughts be also throughout tests

Sieving out to 3 or 4 sizes

| | |
|---|---|
| = fines 27 lb | 1" = 138 lb. |
| ¼" 19 ½ | or 1" 45. |
| ½" 46 | |

Cornwall Continued.

Fines

Nov. 23 [illegible]

The following Exp[ts] were all made under the same conditions as noted —

Collomaze — Divide plumb-bob face of magnet

| | Weight Con | Yards | anal. Con | Yards |
|---|---|---|---|---|
| Fines = | 22 - | 2½ | = 61 - | 4.18 |
| resp. con = | 21 " | ½ | = 63.16 | |

| | Weight Con | Yards | anal. Con | Yards |
|---|---|---|---|---|
| ¼ = | 18 - | 3½ | 50.31 | 12.12 |

| | Weight Con | Yards | Con | Yards |
|---|---|---|---|---|
| ½ = | 17 - | 6 - | 50.13. | 23.89 |

| 1" | Weight Con - Tails | Con | Tails |
|---|---|---|---|
| | 18¼ 5 - | 42.71 | 27.32 |

| 1½ | Weight 17 - | Tails 6 = | 44.70 | 33.66 |
|---|---|---|---|---|

av. First 3 samples both methods on a Tails.

| Con = | 53.84 | Con = | 57.92 |
|---|---|---|---|
| Tails = | 13.39 | Tails = | 17.74 |

Ore = 47.00

Washed Tailings } = 43.50

Recapitulation Sep 25 '93
of Sept 23 Expts



| Times:- | | av. weight | anal. |
|---|---|---|---|
| | Con | 22½ - | 61. |
| | Tail | 2 - | 4.16 |

| Times:- | | | |
|---|---|---|---|
| | Con | 26 - | 61.9 |
| | Tail | 2½ - | 5.24 |

| ¼" :- | | | |
|---|---|---|---|
| | Con | 18 - | 50.31 |
| | Tail | 3½ - | 12.12 |

| ¼" :- | | | |
|---|---|---|---|
| | Con | 14 - | 56 10 |
| | Tail | 4½ - | 21.17 |

| ½" :- | | | |
|---|---|---|---|
| | Con | 17 - | 50.13 |
| | Tail | 6 - | 23.89 |

| ½ :- | | | |
|---|---|---|---|
| | Con | 15 - | 55.77 |
| | Tail | 6½ - | 26.81 |

av. Con = 57.92

| " :- | | | |
|---|---|---|---|
| | Con | 18½ - | 43.90 |
| | Tail | 5 - | 27.32 |

| ¼+ :- | | | |
|---|---|---|---|
| | Con | 17 - | 44.70 |
| | Tail | 6 - | 33.66 |

| Not washed average | Con - - - | 50.00 |
|---|---|---|
| Washed average | Con - | 46.00 |

Roasted Cornwall

Sent us Oct 9th/93 from Cornwall R.R.

Crushed to 8 mesh.

Separator on Ear magnet -

bottom 2 Dyx —


1st Sep.

Con - weighing Con o/o — 58.76

Tails " 1/2 Tail o/o — 12.33

2 Sep. of con & T -

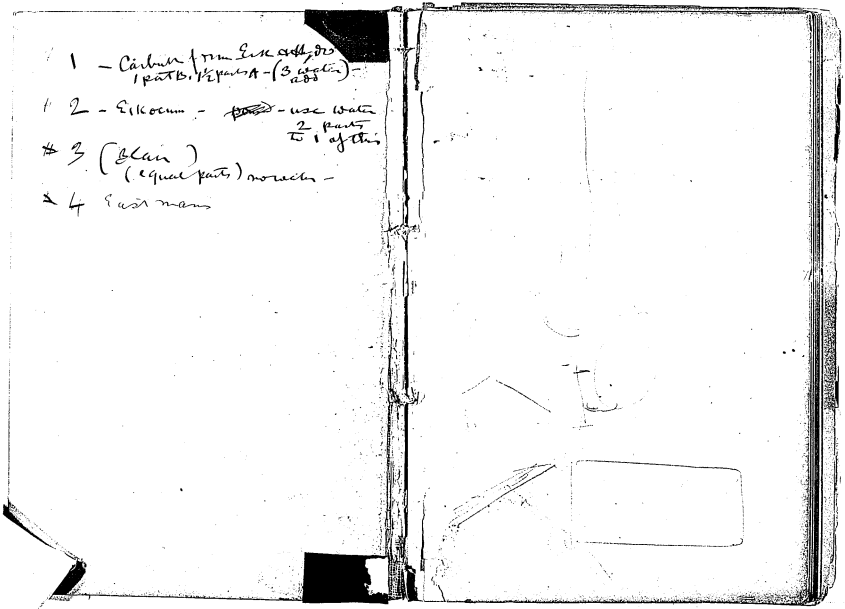
Con weight 1/2 Con — 61.35

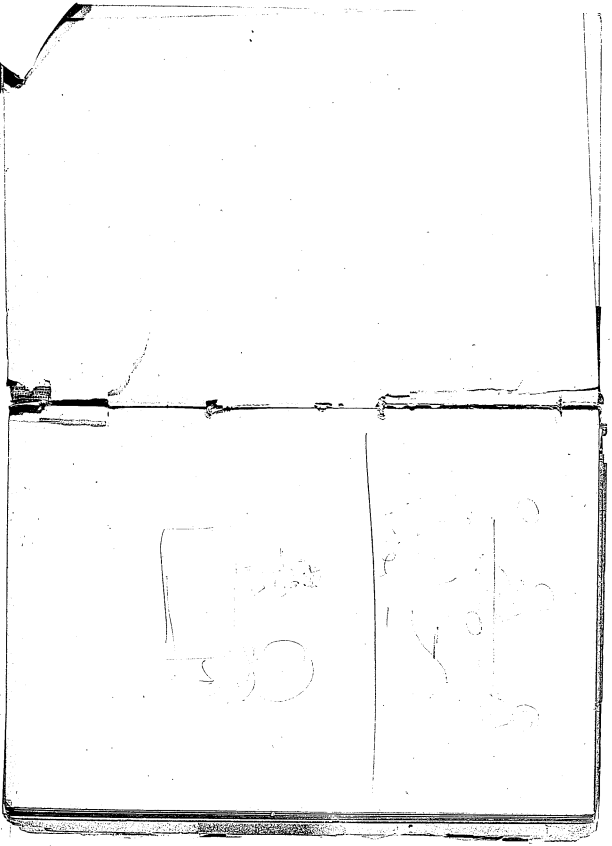
Tail " 1/2 Tail — 26.06.

Oct. 10 93

| | weight | o/o |
|---|---|---|
| Con | 7 1/2 | 57.17 |
| Tail | 1 | 8.88 |

[THIS BOOK WAS USED IN BOTH DIRECTIONS. THE FOLLOWING PAGES WERE FILMED FROM THE BACK END FORWARD.]





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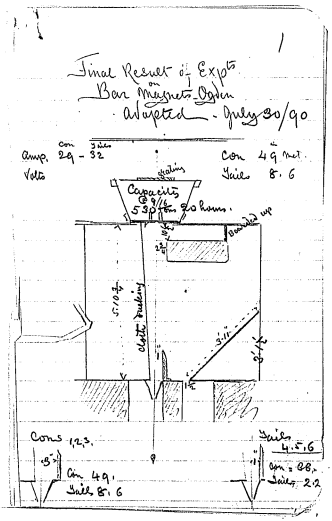

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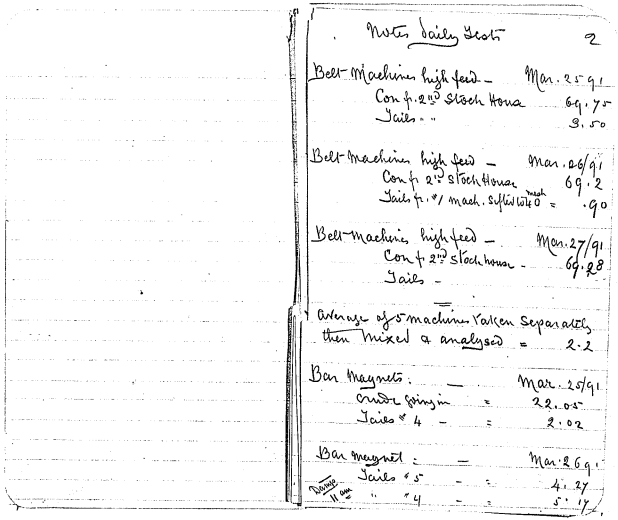


Mersey Daily Tests 2

Belt-Machine high feed — Mar. 25/91
Con f. 2nd Stock House 69.75
Tails " 3.50

Belt-Machine high feed — Mar. 26/91
Con f. 2nd Stock House 69.2
Tails f. 1st / mach. Split into 2 next = .90

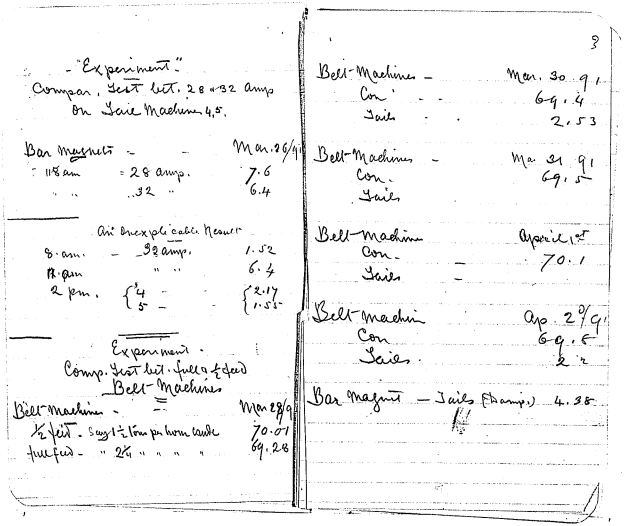
Belt-Machine high feed — Mar. 27/91
Con f. 2nd Stock house — 69.28
Tails —

Average of 5 machine Tailings Separately then Mixed & analysed = 2.2

Bar Magnets: — Mar. 25/91
Under fixing in = 22.05
Tails of 4 — = 2.02

Bar magnet: — Mar. 26/91
Tails of 5 — = 4.27
Dowse 11 mm " " 4 — = 5.17

[ITEM FOUND IN BOOK]



- "Experiment"
Compar. Test lett. 28 & 32 amp
on Incandescent Machines 4,5.

Bar magnets - - Mar. 26/91
118 am = 28 amp. 7.6
" " 32 " 6.4

Anemometrical Measurements
8. am. - 9½ amp. 1.52
Noon " " 6.4
2 pm. { 4 - { 2.17
5 - { 1.58

Experiment
Comp. Test lett. Full & Half
Bell-Machines

Bell-Machine - Mar 28/91
½ Test - Say 1 ÷ 1 Ohm per horn candle 70.01
Full Test - " 2½ " " " " 69.28

3

Bell-Machines - Mar. 30 91
Con - - 69.4
Tails - - 2.53

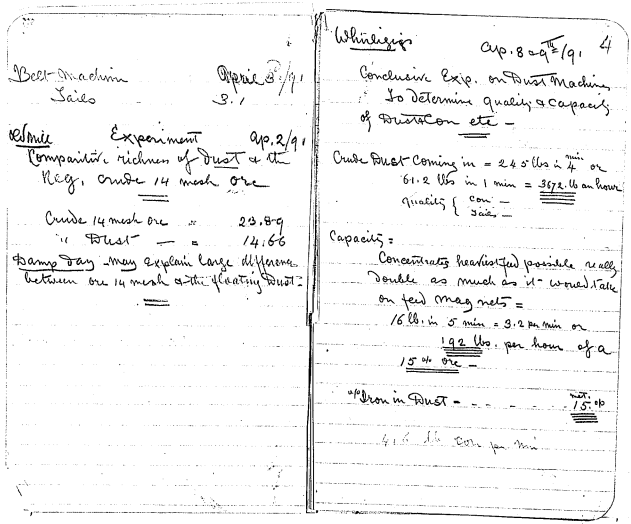
Bell-Machines - Mar 31 91
Con. 69.5
Tails

Bell-Machine April 1st
Con. - 70.1
Tails -

Bell-Machine Apr. 2/91
Con 69.5
Tails 2 "

Bar Magnet - Tails (Dr amps.) 4.35

[ITEM FOUND IN BOOK]



Best Machine — April 8/91
Sails — 9.1

Ref mic — Experiment — ap.2/91
Comparative richness of Dust & the Reg. crude 14 mesh ore

Crude 14 mesh ore = 23.89
" Dust — = 14.66

Samp Day may explain large difference between ore 14 mesh & the floating Dust.

Whitneyite — ap.8-9½/91 — 4

Conclusive Exp. on Dust Machine to determine quality & capacity of Dust con etc —

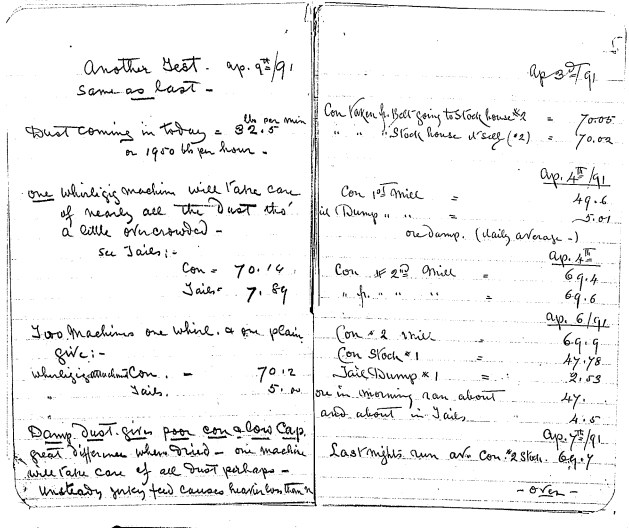
Crude Dust coming in = 24.5 lbs in ¼ min or 61.2 lbs in 1 min = 3672 lb an hour
Quality { Con —
Sails —

Capacity:
Concentrate heaviest possible as well
Double as much as it would take on fed mag nets =
16 lbs. in 5 min = 3.2 per min or 192 lbs. per hour of a 15 % ore —

% Iron in Dust = . . . . . 15.1 %

41.6 lbs Con per hr

[ITEM FOUND IN BOOK]



Another test. Apr. 9th/91
same as last -

Dust coming in today = 82.5 lbs per min
or 1950 lbs per hour -

one whirligig machine will take care of nearly all the dust this a little overcrowded -
see Tails:-
Con = 70.14
Tails = 7.89

Two machines one whirl. & one plain viz:-
whirligig attached Con. - 70.12
" Tails. 5.00

Damp dust. given poor con. a low Cap. great difference when dried - one machine will take care of all dust perhaps - Uniformity of feed causes fluctuations in

Apr 3rd/91

Con taken off Belt going to Stock house #2 = 70.05
" " Stock house #1 (#2) = 70.02

Apr. 4th/91

Con 1st Mill = 49.6
" Dump " " = 5.01
one dump. (daily average -)

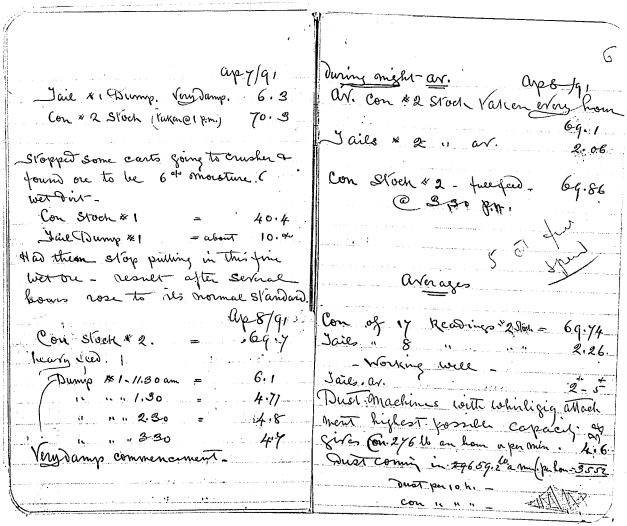
Apr. 4th
Con #2nd Mill = 69.4
" fr. " " " = 69.6

Apr. 6/91
Con #2 Mill = 69.9
Con Stock #1 = 47.78
Tail Dump #1 = 2.53
one in morning ran about 47.
asked about in Tails 1.5

Apr. 7th/91
Last night ran av. Con #2 Stock. 69.4

- over -

[ITEM FOUND IN BOOK]



Apr 7/91

Tail # 1 Dump. Very Damp. 6.3
Con # 2 Stock (Taken @ 1 pm.) 70.9

Stopped some carts going to crusher & found ore to be 6% moisture. Set dial in -
Con Stock # 1 = 40.4
Tail Dump # 1 = about 10.%
Had these Stop pulling in this fine wet ore - result after several hours rose to its normal standard.

Apr 8/91.
Con Stock # 2. = 69.7
Heavy Wed. !
Dump # 1 - 11.30 am = 6.1
" " " 1.30 = 4.71
" " " 2.30 = 4.85
" " " 3.30 = 4.7
Very Damp commencement -

6

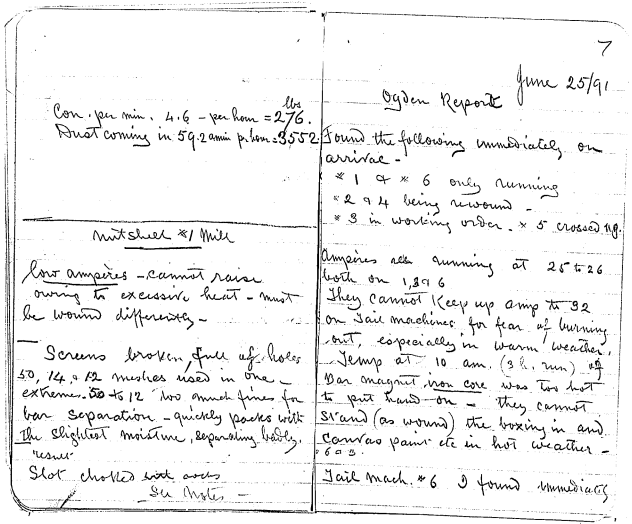
During night - av. Apr 8/91.
Av. Con # 2 Stock Taken very Poor 69.1
Tails # 2 " av. 2.06

Con Stock # 2 - freefeed - 69.86
@ 2.30 p.m.

Averages

Con of 17 Readings # 2 Stock = 69.74
Tails " 8 " " " 2.26
- Working well -
Tails. av. 2 - 5
Dust Machines with whirligig attachment highest possible Capacity. Gives Con 2/6 lb an hour a ton min. 4.6
Dust coming in 2/6 lb. 2 oz per ton = 3502
Dust per 10 h. -
Con " " " -

[ITEM FOUND IN BOOK]



7

Ogden Report June 25/91

Found the following immediately on arrivae -
* 1 & * 6 only running
* 2 & 4 being rewound -
* 3 in working order - * 5 crossed wg.

Amperes 480 running at 25 to 26 both on 1,296
They cannot keep up amp to 32 on Tail machines for fear of burning out, especially in warm weather.
Temp at 10 am. (3 h. run) of Bar magnet iron core was too hot to put hand on - they cannot stand (as wound) the boxing in and canvas pair etc in hot weather -
6003

Tail mach * 6 I found immediately

Con. per min. 4.6 - per hour = 276 lbs.
Dust coming in 59.2 min p hour = 3552

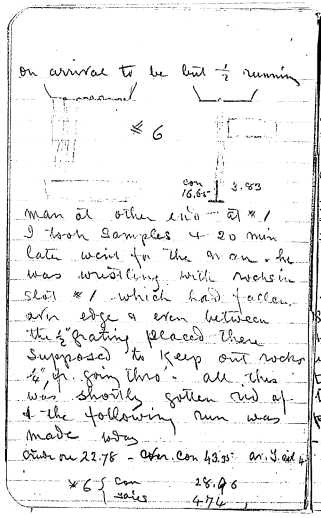
Mutsheet * 1 Mill

Low amperes - cannot raise owing to excessive heat - must be wound differently -

Screens broken, full of holes 50, 14, 12 meshes used in one - extremes 50 to 12 too much fines for bar separation - quickly packs with the slightest moisture, separating badly, result

Slot chocked with ores
See Note -

[ITEM FOUND IN BOOK]



On arrival to be but ½ running

≪6

Con 16.64 | 3.83

Man at other end ≪1

I took samples 4 20 min later went for the man. he was working with worksh slot ≪1 which had fallen over edge & even between the ½" grating placed there supposed to keep out worksh ½" gr. going thro'. all this was shortly gotten rid of & the following run was made today

Outs on 22.78 - Ofer. Con 43.35 on V. sid 4

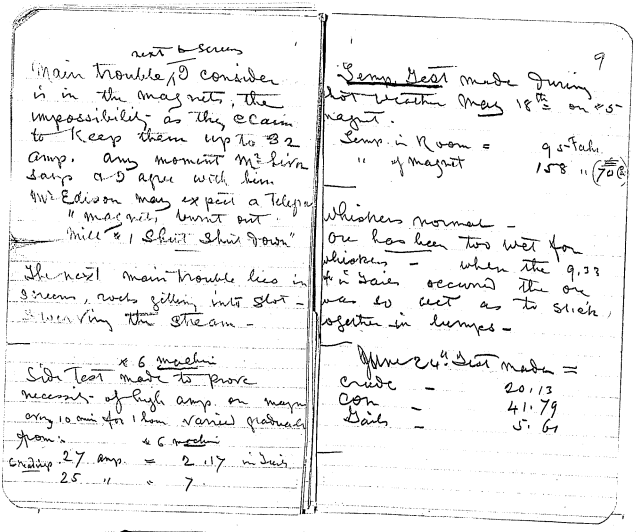
≪6 { Con 28.96 / Outs 47.6

The ≪6 Jaikin parting board was changed during the wet spell of (9.30) from 1" to ½ reducing Jaws to ½" from about 10" Con watched under these circumstances - is so now -

The machines are run now at 25 amp + 140 V. - they vary from 25 Monday to 25 Sat.

Too many cracks & holes in screens varying from 1" down & a large number 50 mesh plate used giving far too many fines to be sep. by wet machines they can cut by 14 mesh & put in 50 mesh & ½" mesh (12 mesh)

[ITEM FOUND IN BOOK]



next screen

"Main trouble I consider is in the magnets, the impossibility as they claim to keep them up to 32 amp. Any moment Mr Sivin says a D apex with him. Mr Edison may expect a Telegram "magnets burnt out." Will x / Shirt Shirt Down"

The next main trouble lies in screen, rocks falling into slot - & wearing thin stream -

Side Test x 6 machine

Side Test made to prove necessity of high amp. on magnets in order to run various gradients from:

x 6 machine

crushing 27 amp. = 2.17 in Dirts
25 " = 7

9

Temp. Test made during last week in May 18th on 95 magnet.

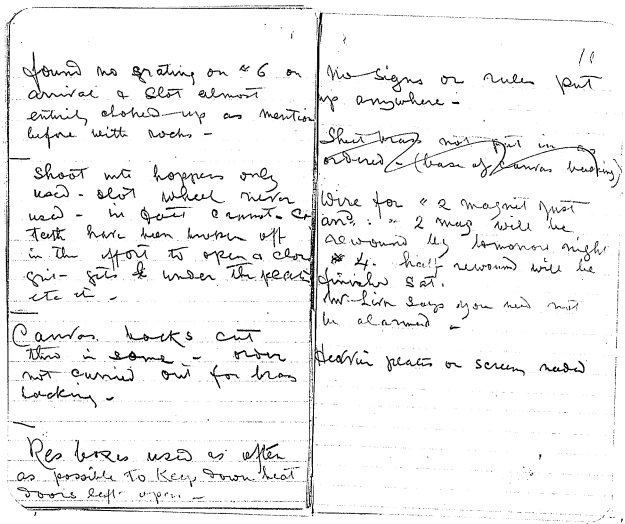
Temp. in Room = 95 Fahr.
" of magnet 158 " (70 C)

Whiskers normal -
One has been two wet for whiskers - when the 9.73 & 5 Dirts occurred the ore was so wet as to stick together in lumps -

June 24th Test made =

Crude - 20.13
Con - 41.79
Dirts - 5.61

[ITEM FOUND IN BOOK]



found no grating on "6 or
Admiral" & Slot element
entirely closed up as mention
before with rocks -

Shoot nuts hoppers only
used - slot wheel never
used - in fact cannot. Set
teeth have been broken off
in the effort to open a clos
gap - gate & under the pea
etc etc -

Cannon. Locks cut
then in some - other
not carried out for brass
locking -

Rear doors used as often
as possible to keep from heat
Doors kept open -

10

No signs or rules put
up anywhere -

Shot trays not put in
ordered (reason of cannon locking)

Wire for "2 magnet shoot
and "2 mag will be
ordered by tomorrow night
"4 shall ordered will be
finished Sat.
Mr Linn says you need not
be alarmed -

Electric heater or screen needed

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END

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